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ABSTRACT

The document is intended to expand and clarify the DACUM (Developing a Curriculum) process and product. As a process, it is a group analysis of a particular job or subject area; as a product, it is one or two sheets of paper showing a skill profile for a job or subject area which can serve as a curriculum outline or plan. The document consists of the following sections: (1) a review of current literature dealing with front end analysis; (2) DACUM as it is currently being implemented; (3) the DACUM procedural manual; (4) DACUM chart information classified by 20 general subject areas or job designations and presented in the document in card file format, each card specifying subject/designation, level, title, developer, terminal performance objectives, and other coded information; (5) advantages and disadvantages of the system; and (6) an epilogue, consisting of comments, coding system information, bibliography, and list of contributors. Appended materials include a sample DACUM chart, a task certification record, and an updated list of 204 DACUM charts offering the name of each program and its developer. (The charts referred to in (4) above, are available from DEX [DACUM Chart Exchange], 20 Railside Road, Toronto, Ontario M3A 1A4.) (MW)

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THE APPLICATION OF DACUM IN RETRAINING AND POST-SECONDARY CURRICULUM DEVELOPMENT

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November, 1974

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THE APPLICATION OF DACUM IN RETRAINING

AND POST-SECONDARY CURRICULUM DEVELOPMENT

PREFACE TO THE FIRST EDITION

(AUGUST 74)

The paper is divided into Parts which will hopefully be more useful as separate units congruent with specific interests and needs.

The primary target audience for this whole paper is the curriculum/staff developer or administrator who is primarily concerned with WHAT is to be learned.

The paper consists of the following Parts:

The Introduction defines DACUM as it is used by this author. It outlines the rationale for doing the research from an interprovincial, provincial and local point of view.

Part I - A review of some current literature dealing with front-end analysis may be useful to developers and instructors engaged in systems approaches to curriculum development. This review serves as a base for putting DACUM into perspective and a way of projecting and predicting how it will evolve.

Part II - This Section deals with the different ways in which the processes and products of DACUM are being used and implemented in different places. It is important to keep these differences in mind when reviewing the various charts.

Part III - The DACUM Procedures Manual is a "How To" booklet. Reference will be made to materials already prepared by the author to (a) introduce the idea to any new group; and (b) begin training co-ordinators to actually carry out the process.

Part IV - This Section consists of a collection of DACUM chart information (not the actual charts) classified by subject or job designations and on card format so that the user can easily build a card file, make his or her own cross-references, add to, make notes, obtain copies of actual charts and further build the file, etc.

Part V - Implications and Conclusions will deal with advantages, disadvantages and some recommendations for future use, as well as a little "crystal-ball gazing".

Epilogue - The second edition contains comments and additional ideas from Gordon Wright of the Bibliocentre and Robert Adams - author of the original work on DACUM.

The Bibliography and References will include the names of people who made contributions to the information on the use of DACUM and/or actual charts. It is hoped that this list will form the beginning of an information network with the College Bibliocentre in Toronto as a collecting and distributing agency.

THE APPLICATION OF DAUCM IN RETRAINING AND POST-SECONDARY CURRICULUM DEVELOPMENT

PREFACE TO THE SECOND EDITION

NOVEMBER 1974

The enthusiastic response to the first edition may indicate that there is a need for DACUM or at least for information about it.

Many requests have been received as well as additional charts and comments. Before printing again it seemed useful to try to include the new charts in the system and to pass on some of the comments.

A series of Job Core curriculum outlines for a wide variety of occupational areas was collected over the last few years. Since the format and approach of these materials are closely aligned with the DACUM approach, it seemed to make sense to include them in the growing collection. Each Job Core curriculum outline was summarized into a set of Terminal Performance Objectives - these have been listed on cards and included in Part IV. The College Bibliocentre will have copies of the expanded outlines for those interested in these occupational curricula.

A page of photographs was included in Part III to help readers visualize the DACUM process.

The classification and coding of charts in this growing document needs additional work. One starts out with the best of intentions, trying to keeps things simple - HOWEVER - as the collection grows so does the complexity of the problem. CCDO is still the basis for classifying but, matching chart titles - to occupational groups - to a meaningful set of categories and codes has probably created some

confusion. Perhaps the 3rd. edition (if there is one) will tackle this time consuming problem.

The epilogue contains comments on the first edition including a proposal from Mr. Gordon Wright - Director of the the College Bibliocentre - on how to deal with the coding system.

The use of the card filing system has worked out very nicely as far as adding and reclassifying charts is concerned. It is hoped that readers will set up the file as suggested.

The author expresses his appreciation once more to Bob Adams for his comments, suggestions and additional chart sources and contacts. Bob's book DACUM Approach to Curriculum Learning and Evaluation in Occupational Training as footnoted on the first page of the Introduction is available upon request, free of charge from:

Technical Services Publications Division
Dept. of Regional, Economic Expansion
161 Laurier Avenue West
Ottawa, Ontario

Bob Adam's comments are summarized in the epilogue. He has made a valuable suggestion with respect to a program development grid for implementing charts.

It is hoped that this second edition will help to meet the apparent need for viable curriculum development techniques. It should be mentioned again that DACUM, in whatever context it is understood or used is only a TOOL - a means to an end and as a tool it should be flexible and capable of changing and evolving as it is used. The end, needless to say, is our common goal as educators - efficacious student achievement of educational and training goals and objectives.

INTRODUCTION

Definition of DACUM (as used by the author)

DACUM is an acronym for Developing a Curriculum or Designing a Curriculum. It is considered to be both a process and a product.

As a product it is one or two sheets of paper showing a skill profile for a job or subject area which can serve as a curriculum outline or plan. This graphic outline presents small blocks, each containing a short behavioural or action-oriented definition, which make up a complete picture of the required skills or abilities within a particular field of human endeavour.(1) Definitions are usually arranged with the simplest tasks on the left and the most complex on the far right.

As a process it is a dynamic group analysis of a particular job or subject area. It is this group process, under the leadership of a competent co-ordinator, which produces the range of skills found in the graphic DACUM chart.(2)

PURPOSE OF THIS PAPER

An expansion and clarification of DACUM is needed at this point because there is a variety of processes and products emerging, all under the name of DACUM. If the various adaptations and uses of the concept are understood, then curriculum developers right across

[1] See sample DACUM charts, Appendix A

[2] R.F. Adams, DACUM Approach to Curriculum, Learning, and Evaluation in Occupational Training. (Yarmouth, Nova Scotia: Nova Scotia New Start Corporation, March, 1972), p. 24.
See also: Overview, Part III of this paper

the country will be able to make better use of existing materials and perhaps start communicating for their mutual benefits.

A collection of DACUM charts has been started and an exchange system proposed. The College Bibliocentre has shown interest in setting up this system, which could be available to all curriculum and instructional developers.

RATIONALE

1. Most provinces have set up community college and/or adult training institutions. Although autonomous effort may be needed to develop the original skills and competencies in curriculum work, it may be time now to begin economizing on the efforts in this area. The high mobility of graduates would seem to point toward more commonly acceptable standards of achievement and performance.

Support for this point can be taken from the enthusiastic response encountered in the seven Provinces contacted for information and charts.(3)

2. The Ministry of Colleges and Universities for Ontario has recently formed two major branches, the Ontario Manpower Training Branch (MTB) and the College Affairs Branch (CAB). From a curriculum standpoint the MTB deals with all publicly funded Training programs while the CAB deals with Post-Secondary programs.

By Training programs is meant Employer Centered and Institutional Centered training. This includes apprenticeship.

[3]See list of contributors in Bibliography

The MTB, as perceived by this author, has taken a co-ordinating rather than a leadership role in curriculum development. There is a need for a quick, relevant, standard way to develop training programs. This technique should not only apply to new programs, but to review existing ones as well. If a standard method were developed then communications between various committees, employers, training institutions and government agencies would be improved.

3. Such a technique should be capable of:

(a) being completed quickly and economically;

(b) involving and including the needs of business and industry;

(c) being represented graphically so that a comprehensive overview of the program is possible on a one or two page format (or a single sheet of michrofiche or 35 mm. film);

(d) being behavioural rather than content oriented (employers seem to be able to agree on what has to be done, but have difficulty agreeing on what has to be known);

(e) setting out a skill profile for a complete set of tasks rather than building vertical subject oriented courses (we have had such programs for years and many complaints about the inability of graduates to "do" anything);

(f) involving the best people in the field with knowledge of future requirements in order to minimize retraining (this includes "learning how to learn");

(g) interpreting and translating the real world into terms that training and educational institutions can build upon and refer to.

4. Apprenticeship training curriculum and standards have been dealt with by the Industrial Training Branch (ITB) for several years. They were part of the Ontario Department of Labour, but are now integrated with the MTB. The ITB has been developing a MODULAR approach to apprenticeship training which uses task analysis and unitization (breaking into small instructional blocks) as procedures as well as performance objectives as a way of setting measurable standards.

An enormous amount of work has been done in the past by ITB and now the MTB (and the colleges) are looking for a way to integrate the ITB's efforts with the present development work taking place in retraining (and post-secondary).

5. As a Manpower policy for training in Ontario takes shape, it is evident that job clustering and skill profile concepts will become necessary. It is also evident that some form of electronic data processing will have to be used to bank tasks, skills, job profiles, labour force profiles, pre-requisites, co-requisites, training needs, etc.

One small step in this direction (a goal for Ontario in this decade) would be a common language and format for describing and developing programs.(4)

6. Newly organized colleges (such as the Lakeshore Campus of Humber College) will need some organizing frame factors for curriculum which will allow them to become computer managed and highly flexible. The shift in organization within the CAAT (Colleges of Applied Arts and Technology) system is toward the learner and

[4] For Points 2 to 5 see Report on "Training for Ontario's Future", by Dr. Dymond (Chairman) and others. Information Canada, April, 1974.

community involvement rather than to the administrative convenience of the institution.(5)

[5]For Point 6 see:(a) Report from "Commission on Post-Secondary Education in Ontario", by D. Wright (Chairman) and others. Toronto, Queen's Printer, 1972. (b) Report of "Task Force on the Integration of Full and Part-time Studies", by V. Baterstelli (Chairman) and others. Toronto, Ontario Humber College, May, 1974.

PART I

REVIEW OF SOME CURRENT LITERATURE DEALING WITH FRONT-END ANALYSIS

Since DACUM (as defined by the author) deals primarily with the WHAT of curriculum as opposed to the HOW, then a quick overview of some current literature dealing with so-called "front-end" or task analysis techniques used for systematic curriculum development will be useful for putting DACUM in perspective. A look at methods of curriculum development might also help focus analysis procedures and subsequently the DACUM approach.

James O'Hanlon, in his brief article, Three Models for the Curriculum Development Process[1] gives a summary of the field. He calls the three models "Management, Systematic and Open-Access".[2]

The management model is perhaps the most familiar. The process itself follows the management hierarchy within the institution. The ultimate decisions are made at the top. Proposals are fed in at the teacher, supervisor and curriculum committee levels and are then screened by various levels of management. Control is maintained by the administrator with the final authority through the careful allocation of scarce resources. Evaluation is done by subjective methods, comparing achievement to standarized test scores, gathering informal comments and following up graduates.

1 James O'Hanlon, "Three Models for the Curriculum Development Process", Curriculum Theory Network Vol. 4, No. 1, 1973-74, 64-71

2 Ibid., p. 64

The chief characteristics of the management model are the instructor/administrator originated nature of the content and the control of resources by management to ensure that the program of study is followed.

The systematic model is goal oriented. The purpose or aim of the curriculum is established first. Decisions regarding its development are governed only by the purpose and hence persons other than management should, in theory, be involved.

The tasks are carefully sequenced and each stage is evaluated in terms of whether it is furthering the original aims. The guidelines for this type of curriculum are usually quite specific and are filtered not by management, but by educational philosophy and psychology. Control is maintained by adherence to the original purpose and guidelines derived from that purpose. Resources are only allocated on the grounds that they help achieve the stated learning goals. Evaluation is based upon the same principle with feed-forward and feedback from each successive stage used for checking.

The chief characteristics of the systematic model are its goal or purpose oriented character and the need for involvement from many areas of the community and the institution to achieve the stated goals.

The open-access model is based upon the humanist tradition in philosophy. Decisions are made with respect to their congruence

to the original humanist rationale. Discourse, openness and discussion are the methods used. Decentralization of decision-making results from openness to all ideas. A decision can be reconsidered at any time and no preconceived plan is required before an idea is implemented. After due consideration statements are formulated which act as guides for those who are responsible for developing and constructing learning experiences. The process is one of continuous experiment. Evaluation is in terms of the humanist rationale which was judged significant in terms of humanistic values.

Its chief characteristics are its humanistic approach and its openness to interpretation based on considered human values. Control of the process is assumed within the framework of rationality and collective interpretations of changing human needs.

O'Hanlon[3] goes on to make the point that these three models may not be as different as they appear. Perhaps they are just different levels of sophistication for the same process. DACUM seems to fit into the systematic model although modified forms of its dynamic, group brainstorming techniques may be used within the framework of any one of the models described. The point here is that perhaps O'Hanlon's idea will give us an insight with respect to the direction the DACUM process is taking.

Assuming that DACUM is primarily an element or function of a systematic approach to curriculum development, then it might be best characterised as a kind of "task analysis". A number of systems models for the development of instruction have been set out by

3 O'Hanlon, op. cit., p. 70.

Paul Twelker, et al[4] in The Systematic Development of Instruction. He gives us five different models based on major research projects; all of them involve defining the problem in some way.

Twelker analyses the five models into three stages, Define, Develop and Evaluate. He breaks "Define" into Identify the Problem, Analyse the Setting and Determine Management Organization.

Leonard Silvern[5] in his course on Designing Education and Training Systems stresses what he calls the JAHAA (Job Analysis, Human Activity Analysis). This, he contends, is the first activity which must be done in setting up a training or educational system.

It is interesting to note that Silvern defines (or rather explains) analysis as[6]:

1. Identify the whole piece of information.
2. Identify the parts of the whole.
3. Relate the parts to each other.
4. Relate the parts to the whole.
5. Separate the parts.
6. Limit by halting the process.

These steps are an accurate description of exactly what happens during a DACUM session.

Twelker appears to be saying the same thing as Silvern, except in a different way. The sphere of human activity or

[4] Paul A. Twelker and others, The Systematic Development of Instruction: An Overview and Basic Guide to the Literature (Stanford, California: ERIC Clearinghouse, March, 1972.

[5] Leonard C. Silvern, Designing Education and Training Systems a 6 day course using analysis, synthesis, modeling and simulation as systems procedures and LOGOS as a graphic language to describe the systems.

[6] Leonard C. Silvern, Systems Engineering Applied to Training (Houston, Texas: Gulf Publishing Company, 1972), p. 58.

endeavour has to be taken apart in a controlled way so that we can identify the parts or functions within that activity and see their relationships. Only in this way can we design experiences which will enable a learner to acquire relevant skills and knowledges, then put them all back together again in a meaningful way. This enables learners to perform broader tasks, duties and jobs and to solve more complex problems.

Mager,[7][8] Butler[9] and Banathy[10] all propose similar analysis techniques. Banathy, however, takes a slightly different approach in that he proposes an alysis of learning tasks as opposed to an analysis of job tasks as proposed by Mager and Butler. This constitutes a difference in degree but not a difference in concept.

The writers mentioned so far do not as a rule use the term "Front-end" analysis. The term seems to have slightly different meanings for different people, but generally speaking it follows Silvern's JAHAA, i.e. establish what's "up front", what is needed. The term "needs analysis" closely fits the concept of a front-end analysis.

[7]Robert F. Mager, Goal Analysis (Belmont, California: Fearon Publishers, 1972), p. 10.

[8]Robert F. Mager and Kenneth Beach, Jr., Developing Vocational Instruction (Belmont, California: Fearon Publishers, 1967) pp. 10-24

[9]F. Coit Butler, Instructional Systems Development for Vocational and Technical Training (Englewood Cliffs, New Jersey: Educational Technology Publications, 1972) pp. 73-84

[10]Bela H. Banathy, Instructional Systems (Belmont, California: Fearon Publishers, 1968) pp. 41-53

Both Harless[11] and Mager[12] have dealt with needs analysis in terms of a "front-end". Although this kind of analysis is closely related to the JAHAA and task or job analysis as such, there is a difference which should be noted. The Harless, Mager type of analysis referred to here deals more with problem-solving techniques. It is designed to meet a slightly different purpose, i.e. solving training, attitudinal or environmental problems rather than examining human activities for the purpose of devising training. However, a systematic development of instruction could not be accomplished without first having done this type of analysis.

Before attempting to summarize some of these ideas it would be useful to consider two other approaches. One deals with the use of task inventories (more elaborate than Mager) and the other with analysis by specific criteria.

Wm. H. Melching, et al[13] in Procedures for Constructing and Using Task Inventories defines a task inventory as "a list of appropriate duty and task statements covering the tasks performed by workers in an occupational area. It may also contain indentification and background information and may be used to collect occupational information from incumbent workers." Three main phases

[11] J.H. Harless, An Ounce of Analysis Is Worth a Pound of Objectives (Falls Church, Virginia: Harless Educational Technologists Inc., 1970)

[12] Robert F. Mager and P. Pipe, Analysing Performance Problems or "You Really Oughta Wanna" (Belmont, California: Fearon Publishers, 1970)

[13] Wm. H. Melching and Sidney D. Borcher, Procedures for Constructing and Using Task Inventories (Centre for Vocational and Technical Education, Ohio State University, Research and Development Series # 91, March, 1973) p. 3.

are involved in the process:

1. construction of initial inventory of tasks (from standard sources, experts and job descriptions);
2. acquisition of information about each task (using questionnaires with large numbers of incumbents - "time" information is collected concurrently - additions and deletions permitted);
3. analysis of task data (results are tabulated - times and frequencies calculated).

Dr. Wm. J. Ullery et al[14] in Task Analysis by Selected Criteria: A Manual describes a technique which is much more sophisticated than Melching's. Both use an initial inventory of tasks and acquire information about these tasks. Ullery, however, builds his tasks into job levels around a job family hierarchy. This allows for branching and job restructuring. He also uses a set of 48 criteria to rate tasks and assist in developing the instruction. In general job levels are analysed in terms of:

1. specific tasks
2. functioning of incumbent with respect to data, people and things
3. minimum general educational development required as pre-requisite for satisfactory performance
4. aptitudes required for satisfactory performance
5. other significant worker traits, such as physical demands, temperaments and interests.

The General Aptitude Test Battery and Gagné's levels of learning were used as constructs to establish many of the 48 criteria. Ullery's

[14]Wm. J. Ullery and others, Task Analysis by Selected Criteria: A Manual (Northeast Centre, Technical Education Research Centres, Cambridge, Massachusetts, Interim Report III, March, 1972)

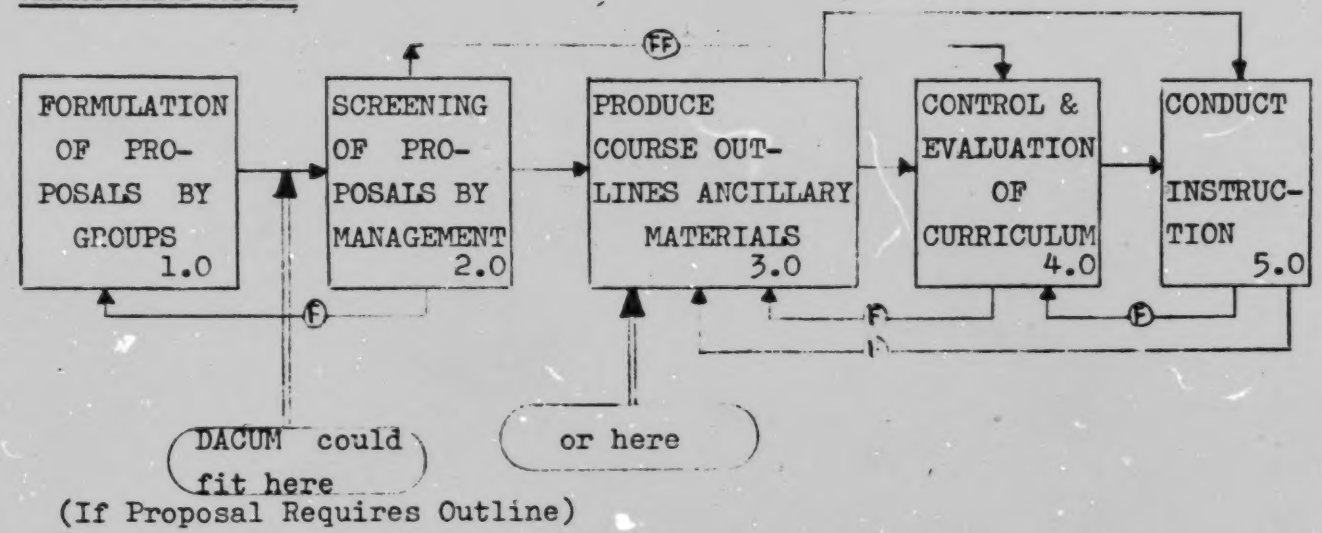
project ended up with three sets of performance oriented learning objectives for three job levels within the Biomedical Equipment Technician field. The end product is very much like a DACUM chart except it simply lists the related tasks with a similar number code while not indicating the major duty or larger terminal competence required.(15)

These last two procedures represent the inventory or questionnaire method of analysis, but both would produce a DACUM chart which in turn needs further analysis and development to implement training or education. The Ullery technique, in particular, is very appealing, but it does not meet the first requirement of a curriculum development front-end technique. It is time-consuming and requires heavy funding. Perhaps some rather complex occupational fields will require such a technique. We may not have any choice except to expend more resources. At least in Ullery we have a way of doing it.

A few block diagrams may help to summarize what is being said here. An attempt is being made to demonstrate the practicality and applicability of the DACUM process (as it is used by the author) as a curriculum development tool. No attempt is being made to demonstrate the inferiority of other techniques, methods or practices.

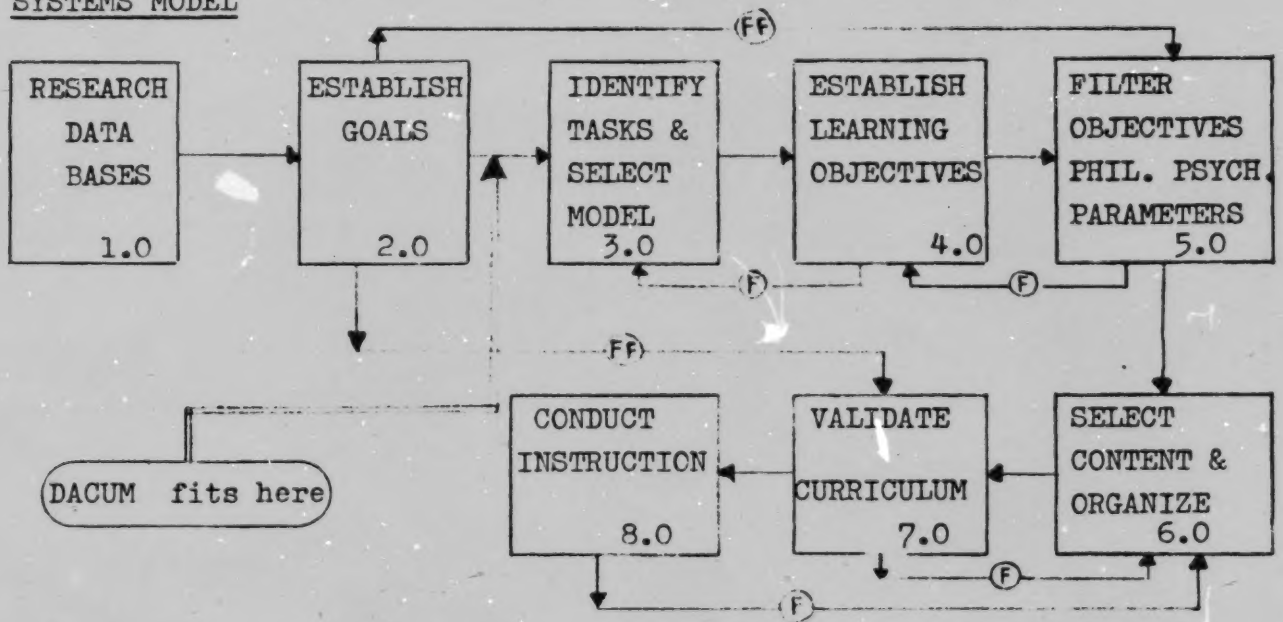
15 See Appendix "B"

MANAGEMENT MODEL

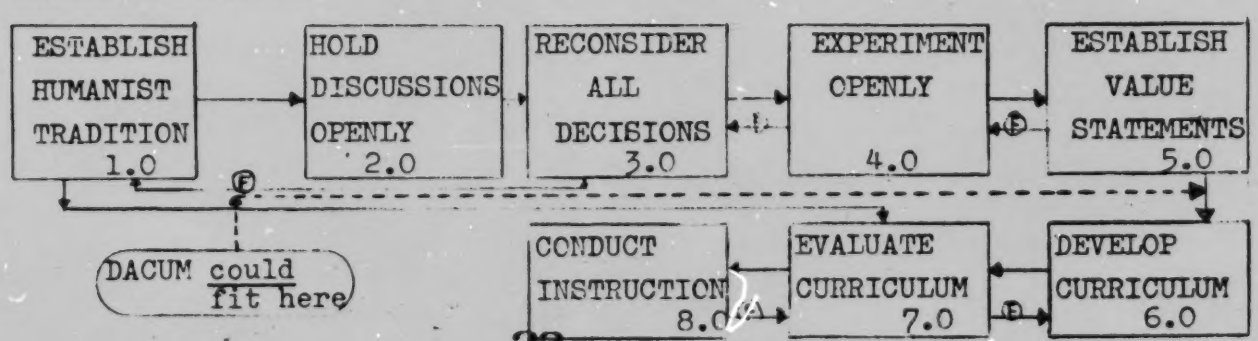


(If Proposal Requires Outline)

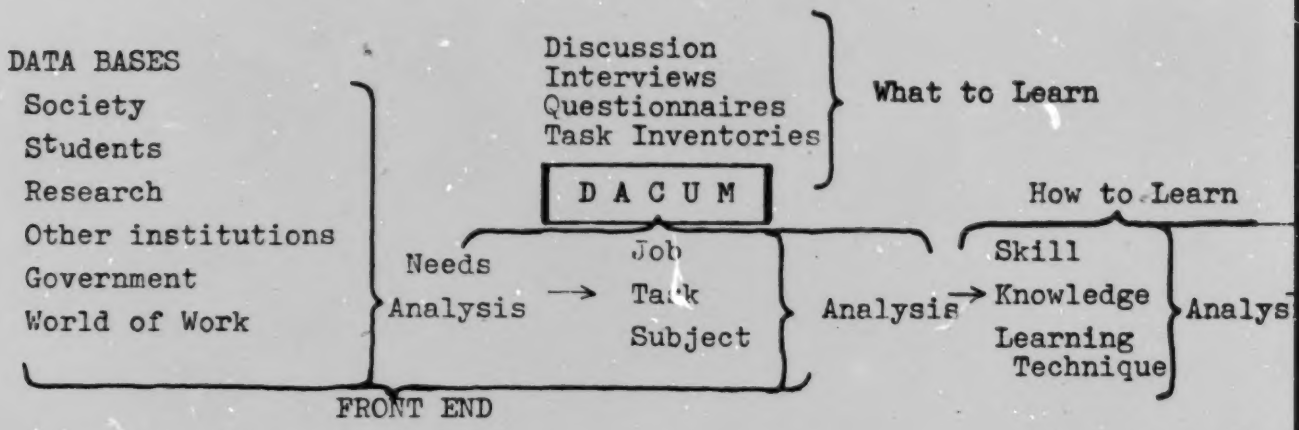
SYSTEMS MODEL



OPEN ACCESS MODEL



All systems models call for analysis of some kind.



It can be seen from some of the literature that front-end analysis is an integral part of systems models for curriculum development and it is suggested that DACUM is a legitimate front-end technique with its own particular advantages (and disadvantages, of course) which will be dealt with in Part V, Implications and Conclusions.

PART II

DACUM AS IT IS CURRENTLY BEING IMPLEMENTED

We have seen in Part I that systematic approaches to curriculum development require a defining and developing stage which necessitates various kinds of analysis. We have also stated that DACUM is both a process and a product and that it can be one more tool for helping to solve the "front-end" problems of systematic curriculum development. As mentioned earlier, not all users of DACUM implement it in the same way. Some users have a much broader application which includes the "HOW" of instruction as well as the entire instructional management system.

Information and documentation on the process is scarce - simply because it is a fairly recent innovation. Many of the statements and comments included in this section of the paper are from conversations, telephone calls, letters and discussions. The best and most complete written account of DACUM is in the Nova Scotia New Start Report by Robert E. Adams, 1972. A somewhat different account of DACUM is in a 16 mm. film by Howard Clemens, Department of Regional Economic Expansion, Social and Human Analysis Branch, titled DACUM - Designing a Curriculum. This film was produced in British Columbia. A short write-up titled In Step with Holland College also gives a slightly different view of DACUM as a complete learning and evaluation model.

From the evidence at hand the early beginnings of DACUM were with the Job Core project in the U.S.A. The concept was picked up and refined firstly in the Canadian West and then, through the Canadian

Department of Regional Economic Expansion, was spread into various Canadian New Start Corporations (not greatly different from the Job Core idea, at least in the beginning).

The story of exactly who and how varies from place to place and person to person. In spite of how it happened, the Nova Scotia New Start Corporation, the Saskatchewan New Start Corporation and the Vocational Educational Section of the British Columbia Department of Education began using it.

The New Start corporations no longer exist as such, but the innovative work that they did carries on in places like Holland College, Prince Edward Island; Nova Scotia; Newfoundland; Saskatchewan and British Columbia. Ontario is a new-comer with respect to DACUM.

For the Nova Scotia New Start application the development of the DACUM chart was one of the very important first steps, but the skills identified on the chart and the way in which they were organized became the management scheme for the entire instructional process. Appendix "C" illustrates this instructional process. Look also at Appendix "D". This outlines the instructional system now used by Holland College. The similarities are obvious. What we are seeing are models for INDIVIDUALIZED instruction. The big difference between these models and those found in the present literature (as in Part I of the paper) is the nature of the evaluation process. Students are to rate themselves. This is done at Holland College in their STEP[1] program. The point to note here is that the DACUM process(as defined at the beginning of this paper)was seen by the original developers as a part of a whole,

[1]STEP means Self Training and Evaluation Process

a whole instructional system which was specifically designed for adults in a vocational training situation.

What has happened is that the process and the product (the technical committee brainstorming thing and the charts of skill definitions) which is called DACUM as defined in this paper have been extracted from a larger process. Perhaps it would be fairer to say that it is done in almost the same way as the Nova Scotia New Start/Holland College group did/do it, but it is used differently. In the opinion of this author, the "extracting" has not changed the integrity of the process/product nor its usefulness as a front-end analysis and curriculum development technique. It is this extracting from a larger "whole" of an instructional-learning system that allows us to apply DACUM in many different settings. Whenever a task or behavioural analysis technique would be useful in outlining the skeleton of a curriculum, then DACUM could be used.

This brings us to the charts which have been produced and the point of this whole Section. Can the products of DACUM be used elsewhere? Does it matter whether the chart was produced by a group using DACUM as an independent process (so that a different instructional system can be developed) or by a group using DACUM as part of a larger process? From the best information available to this author it does not appear to make any difference, so long as the developer knows something of the origin of the chart.

When being developed as a part of a whole scheme there is rather heavy emphasis upon the level and the rating concept. Vertical alignment is also quite important for the grouping of skills.

These two factors get played down when the chart is produced for use in a different kind of institutional setting. The task analysis with a fairly broad range of skills become more important.

In other words, there may be some differences in job specificity and occupational differentiation between the two situations.

The Saskatchewan New Start group used DACUM in a different way again. The process consisted of a six step model, as follows:

1. Defining Terminal Behaviours
2. Selecting Evaluation Techniques
3. Defining Instructional Unit Objectives
4. Designing Instructional Unit Evaluation
5. Preparing Learning Activities
6. Preparing Individual Student Activities

A DACUM chart produced in this way (not a two or three day technical committee doing brainstorming) is more like a scope and sequence chart.(2) It must be mentioned that the Saskatchewan group was primarily interested in Basic Adult Education - literacy and numeracy, while the Nova Scotia group worked with job specific training - motor vehicle mechanic, deckhand, nursing assistant, etc.

The Saskatchewan New Start charts <u>appeared</u> much more content oriented (although they were embedded in a behavioural, generic skill base) and many subsequent charts modelled on the LINC(3) charts have been produced in Ontario and elsewhere which are

[2]These are used in primary and secondary school curriculum development mainly as subject-specific course guides or lesson/teaching-point outlines.

[3]LINC - <u>Learning Individualized for Canadians</u> - is an Adult Basic Education packaged program in language arts and math produced by Saskatchewan New Start Corp. This has been a <u>very</u> successful venture and no detraction from their work or charts is intended.

actually subject taxonomies or a content, scope and sequence. When in the hands of a person who is not aware of its origin, use, application or adaptation, content types of charts defeat the whole purpose of behavioural(task) analysis as a learning technique leading to performance objectives.

The British Columbia technique is very well explained in the film DACUM - Designing a Curriculum. A dynamic group process is used to develop the charts, but they are organized differently than the Nova Scotia, Prince Edward Island and Ontario charts. These charts are set up in tracks (horizontal, parallel bands) with sub-groupings that become blocks, or units, of a course. The steps taken in their entire DACUM process (not just producing a chart with a committee) are listed below:

1. Establish National/Provincial advisory committee;
2. Establish curriculum sub-committee;
3. (a) Develop, publish and validate curriculum chart;
   (b) Identify learning resources;
4. (a) Develop, publish and validate syllabus modules;
   (b) Relate and code resources to syllabus;
5. Introduce chart and syllabus to instructors;
6. Monitor effectiveness and suitability of curriculum content.

These B.C. charts are produced for Province-wide distribution and act as the chief curriculum document in many cases. Other charts are produced in conjunction with educational personnel from foreign countries. See Appendix "A" for an example of a B.C. chart. As far as can be determined, there is no concept of self-rating or a rating scale being used as an integral part of the instructional system in any of the Western applications of DACUM.

That leaves the Ontario charts. As mentioned before, several of these are of the scope and sequence type. In addition, some of the charts, at Humber College for example, were developed by instructors within an on-going program rather than by a community or Provincial committee. Charts developed by instructors in an on-going program tend to be set up according to the vertical subject type of curriculum organization or the theory-practice approach.[4] These charts are useful, but do not provide the "embedded" or "real-job" type of curriculum which the original DACUM was intended to do. The chart which is an after-thought cannot become an instrument for relevant, job or generic skill-oriented change in the learning environment. Those charts developed by specially selected business and industry committees have, according to all information collected by the author so far, been the most useful and relevant ones implemented to date.

To summarize, DACUM appears to have the following meanings, uses and applications:

1. DACUM: dynamic group behavioural/task analysis + sheet(s) of paper show skill profile for course or job

USED BY: the author; some Ontario colleges

FOR: basic curriculum & instructional development; instruction can be delivered in a variety of ways, e.g. - group, individual, correspondence

[4] Such an approach may very well have been the advice of a local advisory committee several years ago.

2. DACUM: includes number 1 as part of an overall instructional system;
chief characteristics are self-rating and individual

USED BY: Nova Scotia New Start Corp. (now defunct, but several people are involved with the Adult Vocational Branch of the Nova Scotia Department of Education);
Holland College, Charlottetown, P.E.I.

FOR: further curriculum development or as part of a complete training system - managing instruction - record keeping and tracking or monitoring of students - budgeting and allocating resources, communicating skills to potential employers

3. DACUM: a series of procedures which gradually develop the objectives, evaluation and learning activities/resource elements of a complete system (may include a variation of number 1 above)

USED BY: Saskatchewan New Start Corp. (now the Training Research and Development Station of the Department of Manpower and Immigration)
Vocational education branch of British Columbia Department of Education

FOR: development of primary (curriculum skeleton) and secondary (detailed course outlines) instructional elements as well as content networks to be fitted into an instructional delivery system

4. DACUM: a chart showing the content or scope and sequence of the substantive elements of a course or program

USED BY: some Ontario colleges and others

FOR: course development, communication to students and teachers, student records

No matter how DACUM is defined and is being implemented, the two features which are clearly common to all areas are:

(1) the use of a systematic approach to curriculum development with its attendant requisite to analyse; and

(2) a chart or graphic representation of the curriculum or course requirements is produced and used for various purposes - from a simple, content outline to a complete record keeping, management system and communication tool.

It should be pointed out that the charts themselves are only PRIMARY instruments. They are not detailed sets of course or program objectives. The definitions on a chart are limited to about eight words and most have even fewer than that. These definitions must be OPERATIONALIZED and the SECONDARY instruments of instruction must be produced. By secondary instruments is meant the learning objectives, the enabling techniques and experiences necessary to master the skill, job, task, ability, competency or concept expressed in the chart definition. In other words, the whole teacher's job must now be done.

One more note on the current uses being made of charts. A carefully selected committee (see Part III - DACUM Procedures) with one or more existing charts and a comprehensive explanatory session can, in rather short order, add to, update, delete from, revise and generally "localize" the chart(s) giving a new and relevant program outline to the developer. The committee can also be asked to contribute specific content items, i.e. which type of - motor, switch, instrument, paragraph structure, legal code, set of principles, attitudes, physical attributes, arithmetic problems, business machines, etc., etc., are being presently used. These committees are a tremendous data base from a content standpoint AFTER the skill profile or behaviourally oriented (PRIMARY elements first) chart is COMPLETE.

How is this process set up and controlled so that useful charts are produced? See Part III.

PART III

DACUM PROCEDURES MANUAL

OVERVIEW

We are talking about DACUM as a process here, the process required to produce the DACUM CHART. A co-ordinator works with a specially selected group of individuals who have a range of experience in a particular field of endeavour.

By guiding dynamic group discussion and drawing out the members of the DACUM committee, the co-ordinator builds up a kind of skill profile or job analysis. He prints short definitions on file cards which are stuck up on a large blank wall in a structured pattern. The definitions are short, begin with a verb or imperative and hopefully cover the entire range of activity within the field of endeavour (job, occupation, vocation, subject area). The analysis proceeds from a fairly high level or broad range of activities to increased levels of specificity. The degree of specificity is carefully controlled by the co-ordinator.

The cards are arranged or sequenced according to an appropriate rationale, i.e. level of difficulty, subject toxonomy or logic or the nature of the job or occupation. By numbering the completed arrangement of cards the information is transferred and transcribed on to sheets printed with blank squares. These sheets are now used as the basic curriculum development instruments and are referred to as DACUM CHARTS or Student Program Charts.

ASSUMPTION-TO USE DACUM

This manual assumes that a decision has been made to develop a curriculum or to put forward a proposal for developing some particular program or course of instruction. In some cases this initial decision may involve a number of procedures, meetings and reports from various regulatory bodies.

SOURCES OF INFORMATION

The steps outlined here are guidelines only. They are not intended to be prescriptive. They are based upon the author's experience and information gathered informally from others who have done it. The author's indebtedness to Robert Adams' report DACUM: Approach to Curriculum Learning and Evaluation in Occupational Training, March, 1972 is fully acknowledged. The contributions of George Luddeke of Northern College and Glen Tippett of the Training Research and Development Station, Prince Albert, Saskatchewan, are also gratefully recognized.

TARGET AUDIENCE FOR THIS MANUAL

The target audience for this part of the paper includes those curriculum specialists with the responsibility for outlining the goals and objectives of a program or course. Personnel with titles such as Curriculum Co-ordinator, Program Development Co-ordinator, Educational Development Officer, Educational Services or in some cases Professional Development or Staff Development Officer or Co-ordinator might be interested in using this material. Training and Development personnel in business, industry and government may also be interested.

ASSUMPTION- CHART CAN BE OPERATIONALIZED

Another assumption is that the person who co-ordinates or conducts the DACUM and produces the chart can either, by leading an appropriate group or by calling upon the appropriate human resources, carry out the subsequent steps to operationalize the chart. Anyone with an instructional systems or educational technology background or even job/task analysis leading to appropriate on-the-job and institutional training should be able to do this. A trained instructor with nothing more than the chart and some expertise within the content and skill area of the chart should be able to conduct a successful, conventional (group oriented) program. The structure and nature of the charts, however, when produced by the techniques as outlined here are more conductive to individualized learning delivery systems using learning packages or Individual Learning Programs (ILPs) as they are called.

This guideline does not attempt to deal with the techniques of how to operationalize these charts. Authors such as Mager, Butler, Burns, Kapfer, O'Reilly and Langdon have developed techniques on the HOW aspect of instructional development. An individual learning program titled Instructors of Individualized Programs by the author was designed to enable instructors to perform the tasks necessary for operationalizing DACUM charts.*

THE CO-ORDINATOR AS KEY PERSON

The co-ordinator is the key person and nothing could be truer here than the old saw "You learn by doing". To do a DACUM the

* SEE ADAMS' SUGGESTION IN EPILOGUE

co-ordinator should have a pretty broad academic and interpersonal background. He/she needs experience in group handling (stand-up teachers and lecturers of adults develop these skills). The co-ordinator must have a facility with words, a good DESCRIPTIVE and BEHAVIOURAL vocabulary is necessary; experience with curriculum and analysis techniques is also important. A knowledge of the subject area being DACUMIZED is NOT necessary and may even constitute a hinderance.

Studying Robert Adams' report on DACUM and a variety of DACUM charts is a useful exercise. The author has a fifty minute video tape which was edited out of a two day DACUM session. Simulations are not as good as the actual exercise, but it may be possible to do some "dry-runs" with willing volunteers. Mr. James Sussi of Kodak does something like a DACUM in about twenty minutes using file cards and a storyboard. A random group is asked to identify the occupation of "Housewife". Everyone can participate and perhaps a few simulations of this kind would be useful before the real thing. Areas such as "housewife" are useful because the group must be manipulated into stating what has to be done rather than what has to be known.

Ability to quickly print legible definitions on 4"x6" file cards is essential.

SELECTING AND ORIENTING THE DACUM COMMITTEE

Assuming that an appropriate person is prepared to co-ordinate a DACUM session, the next task is to select the proper committee members. This task is sometimes the most difficult activity of all.

It is often considered expedient to ask people to sit on a DACUM committee for political reasons. In the author's view, this temptation must be resisted. If you have no choice, be sure that the co-ordinator is aware of the "political" appointees. These people often have vested interests or a private axe to grind. For DACUM work they are a hinderance and it requires all the skill the co-ordinator can muster to control them and the work as it proceeds.

Whoever is responsible for getting the DACUM committee together should be fully aware of what DACUM is all about. A short eighteen slide presentation has been prepared by the author for this purpose. A brief handout with a few pictures and sample charts is also useful. The best people for the committee are those who are actually doing or supervising the job or are directly involved with the endeavour.

The following guidelines may be useful:

1. Committee members should be from a cross-section of the business, industry or enterprise. Large, medium and small firms should be represented.
2. The committee should be representative of the entire region (local, regional, provincial, etc.) being considered.
3. Quite often the skills that are involved cover a number of areas within the industry - servicing, manufacturing, distributing, developing, selling, etc. There should be representatives from these different areas.
4. The committee should not be less than 6 nor more than 14. 10 seems to be about ideal in this author's experience.

5. Committee members should be prepared to attend for the FULL two days, all day. Some form of remuneration should be offered (daily rate or a fancy dinner, for example).
6. Committee members should be selected on the basis of their ability to verbalize, keep abreast of their own field and to make predictions and projections about future developments within the field.
7. If an executive or administrator of a profession, trade, union, industry or business organization offers to get people, attempt to get others involved as a means of striking a balanced committee. These people usually pick other members with exactly the same partisan or personal interests in mind. This leads to a chart designed to help a segment of the industry rather than to serve a more general need.

   It may not be possible to avoid this situation and still maintain the support of a rather influential group. One thing that has been tried is to hold several DACUM committees, each with its own particular interests in mind, then analyse and synthesize the different charts into one chart. This technique is only recommended as a final alternative. It is time-consuming and everyone feels compromised afterward.

8. A short explanation of DACUM with perhaps a picture or two and a list of its advantages should be on hand to send out to potential DACUM committee members. These people often have to justify in depth to their superiors the reasons for being off work for two days. Personal contact is much better than letter or even telephone.

9. In small communities the difficulties of getting a committee together seem somewhat less. In larger communities trade unions and industry/business organizations are often reluctant to get involved. They see the school or college as trespassing on their territory.

   The kinds of people to avoid in DACUM work are the leaders of such outspoken groups or organizations as mentioned before. Public relations and managerial personnel who have never actually done the job AS IT IS BEING DONE NOW should also be avoided.

   Oddly enough, instructors, too, should not be members of a DACUM committee. An instructor with any experience at all carries a number of biases about how a course should be learned (theory first, and large doses of it too, until the student knows what he is doing as well as I know, etc., etc.).

   If the actual or proposed instructor of the new or considered program or course is available, it is an excellent idea for this person to sit in as an OBSERVER, but not as a participant.

10. Once the committee has been selected, a pre-DACUM session is recommended. A general talk with perhaps a slide show, sample charts, video tape or film will save a lot of valuable time during the two day session. If this is not possible, the short explanatory notes or monograph mentioned before

should be sent to every member with the time, place and telephone number (many of these people are the key personnel in their area and often get urgent calls).

DACUM is a new and different experience for most committee members. Every bit of orientation and preparation that can be done prior to the session adds to the quality of the chart.

PHYSICAL REQUIREMENTS AND ACCOUTRAMENTS

1. A room with at least 30 feet of plain unbroken wall. This is to be used for putting up and arranging the cards. (Some co-ordinators use huge storyboards with plastic strips for holding cards.)
2. Comfortable chairs, preferably swivel-type with arms.
3. Enough low tables or desks to completely line up along the length of the wall. This line of tables serves to separate the seated members of the committee from the wall. It's also a place for charts, coffee, ashtrays and microphones (if you are recording).
4. Coffee should be available throughout the two days. If the committee as a whole breaks for coffee, leaving the room, the process is difficult to get started again. It is suggested that the committee not go out for lunch. Bring in sandwiches or eat in a nearby cafeteria. The longer they linger, the more difficult it is to get back to the task.

NOTE - All of the foregoing furniture arrangements are intended to keep the committee focused on the wall. Once they begin discussions among themselves the process lags or deteriorates. The row of tables is needed because the level of enthusiasm or excitement can incite a member to go up to the wall and pull off or rearrange cards. All cards must be controlled by the co-ordinator and only moved or changed with group consensus. (See Appendix "E")

5. A blackboard or large sheets of paper for outlining the occupational or subject area.
6. Half a dozen felt pens (black).
7. Large printed sign stating "The Individual Must Be Able To..." This is fixed on the wall, fairly high and to the right of centre.
8. Supply of file cards - 2 different colours - one colour preferably of a larger size. For example, 5"x7" blue and 4"x6" pink or white.
9. Plastic putty for sticking the cards to the wall.
10. Three metre or yard-sticks. The putty is placed along these in small pieces handy for placing up cards in a hurry.
11. Sample DACUM charts - preferably from a related area of endeavour.
12. Sample verb lists, taken from other charts and curriculum or instructional objectives lists. These can be handed out if it is obvious that the committee is having trouble verbalizing the skills.
13. The author has not used name tags. This does not seem necessary, but a prepared information card which the members fill out provides you with an accurate list of who is there (employers

sometimes send substitutes. You have no control over this unless you set up an embarrassing situation which puts everyone off right from the start.) and some idea of their general experience.

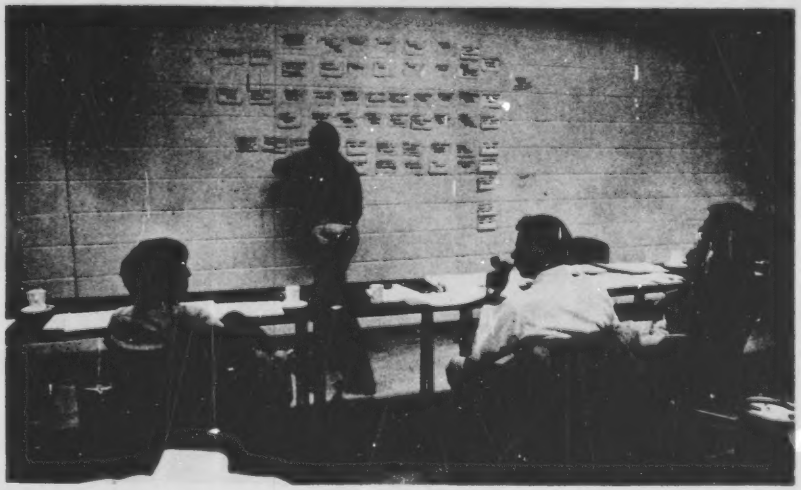
14. It is a good idea to hold the session away from the school or college altogether, if possible. Committee members may insist on a guided tour of the facilities, school administrators may want to drop in or bring in guests for political reasons. All of these detract from the session.

    If the session is to be held on school premises, the co-ordinator should insist in the strongest possible terms that they be undisturbed for the whole two days.

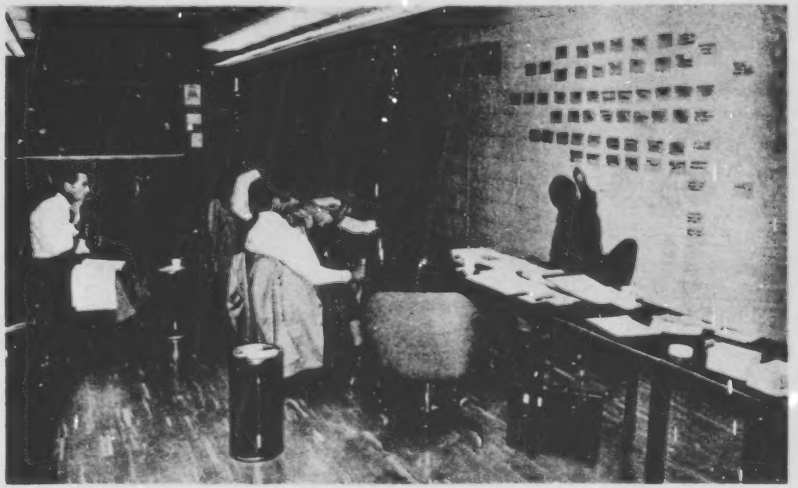
SEQUENCE OF TASKS

The session itself goes through several stages:

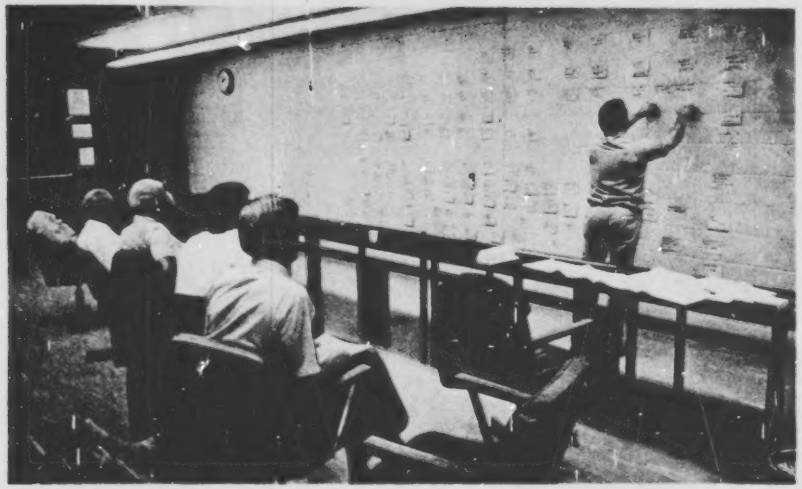
1. General introduction and orientation.
2. Review of the occupation or subject.
3. Identifying the General Areas of Competence.
4. Identifying the specific skills for the first general area - this is called completing the first BAND.
5. Identifying specific skills and completing the remaining bands (one band for each General Area of Competence).
6. Reviewing and refining the definitions.
7. Sequencing the skills.
8. Establishing levels of competence for each skill in terms of difficulty, frequency and general importance to the overall endeavour.
9. Final structuring of the chart and conclusions.



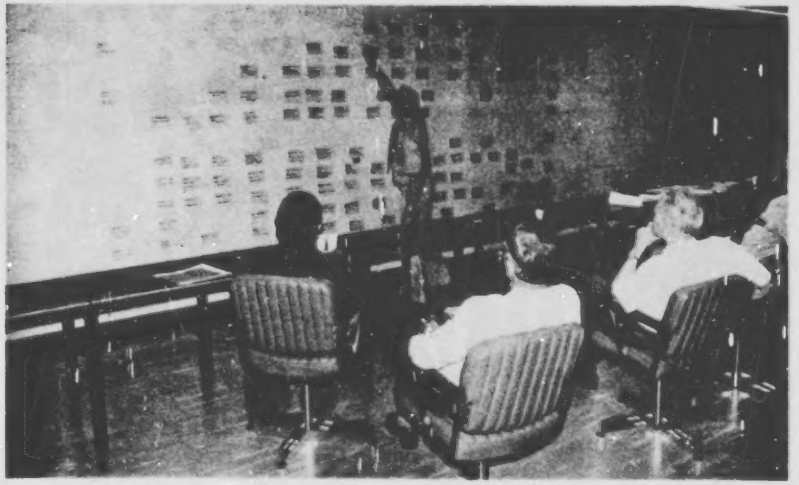
Starting the process, note major areas of Competency down the right side.



Working out each band of individual skills for each major competency.



Sequencing each band according to the order in which the skills are mastered.



Lining up the skills in groups which provide job levels within the program.

STAGE ONE - GENERAL INTRODUCTION AND ORIENTATION

Stage 1 could be very short if the co-ordinator has had a chance to meet with the committee before. If the committee has had no prior briefing, then an overview of the whole process must be given. The co-ordinator must stress that they will be identifying behaviours or activities rather than knowledges or concepts (hence the large sign on the wall).

A rationale for the process can be supplied with a short story about the hypothetical development of a program, say heavy equipment or maintenance of some kind. Adams does this nicely in DACUM 1972. In the course of the orientation it is a good idea to give a short resume of your own background and qualifications as a co-ordinator (establish your credibility).

An outline of a short conceptual orientation story follows. Have members refrain from asking questions until the story is finished.

- Need for a program is established - brand new
- Institution does not have any experience - resources, equipment, etc.
- Hires a teacher who has had supervisory experience and has trained new employees
- New teacher sets up course exactly as he did it on the job - spends time with individuals - lots of hands-on experience - can tell when trainees are competent - helps them get jobs - the learners do well in the jobs
- During next few times through teacher looks for more efficient way - sets up presentations and lectures - feels they should know more - adds more content - related study, math, physics, etc.

- Graduates want recognition for their studies - a certifying body sets up qualifying exams - more time is spent in preparing for the theory exams, less time is allowed for hands-on practice - teacher changes from a foreman to a specialist presenting theory
- More and more trainees do not finish - others are counselled not to take course because of so much theory - Industry experiences high turnover with the graduates - they move on to something else very quickly
- Eventually a study team examines the situation and recommends that there should be a higher pre-requisite - grades 10 or 11, or better, and Industry should restructure its jobs to provide upward mobility
- BUT Industry needs these men - so they start their own training programs or complain bitterly to the schools that they are not producing the kinds of people needed.

WHAT WENT WRONG? -

- Instructor did not specify just what he wanted students to be able to do - needed a set of learning objectives or goals based on Industry's requirements
- Instructor could not evaluate learner performance - needed a way of evaluating what is related to the job - students must reach a certain minimum level of ability or competence in order to start in on the job
- Needed a set of procedures which would prevent instructor and students from drifting into modifications leading away from the learning objectives

If committee sees that this applies, introduce the DACUM solution:

- Use an existing chart to explain how the profile is set up
- The required learning objectives come from the definitions on the chart
- Rating system with a base line - uses levels - say LIMITED, MODERATE, SKILLED
- Rating system expands each definition - "The Individual Must Be Able To ..." This relates to every skill - remember that this course will prepare a person to START, not give him the equivalent of years of experience
- What will be done with the chart? A set of learning objectives and experiences will be pulled out of it and a course organized around it. ONLY THE COMMITTEE CAN CHART OUT THIS IMPORTANT BASIC SKELETON OF THE CURRICULUM.

STAGE TWO - REVIEW OF THE OCCUPATION OR SUBJECT

It is important that the committee "ZERO IN" on the representative person they are about to analyse. They need a mental image of a real or proposed set of competencies possessed by some individual involved in the occupation or dealing with a subject area.

One way in which this can be done is suggested by Adams and has worked successfully for the author:

Divide the world of work (if the DACUM is dealing with an occupation) into four main categories:

Professional Technician Craftsman Operator

You may have to choose other terms, such as "Tradesman" or "Assistant" depending on the group.

(Remember that DACUM can be used for so-called "subject" or "discipline" analyses as well. The procedures, of course, would differ, depending on the subject and the nature of the committee, i.e. experts, teachers, supervisors, professors, recognized members of the community, etc. The co-ordinator must be able to innovate.)

Get the committee to give the names of jobs within this field. Fit them together in a kind of network on the blackboard so that the field becomes clear. The mobility within the field should be evident and the single or group of occupations which they are going to analyse must be made as specific as possible.

STAGE THREE - IDENTIFY THE GENERAL AREAS OF COMPETENCE

Move into this quickly. Use the larger of the two types of cards you have on hand.

Ask for duties or broad areas of ability which occupy a large part of the time on the job.

Most committees tend to give detail at too low a level.

Ask if this duty has a number of sub-duties or tasks. If they can't break it down, do not accept it as a General Area of Competency.

Get printing on the cards. Insist on a verb or imperative and no more than 6 words.

Put cards up as quickly as possible in a vertical row on the right side of the wall.

You will probably have to regroup and change quite a few of these as the session proceeds.

Once these General Areas of Competence are up (there shouldn't be more than 10 or 12) group them under general areas. For example, supervisory, administrative, use of tools, analytical, problem solving, etc.

STAGE FOUR - IDENTIFYING THE FIRST BAND OF SKILLS

Choose an area of competence that appears to be fairly easy for the committee; hand skills or manipulative skills rather than something analytical or of a supervisory nature.

Insist upon "The Individual must be able to ...". Do not accept definitions which start with "He should know..."; "He has got to understand...", etc. When the members persist in saying this, ask "Why does he have to know that?". Once they get the idea, the definitions will come in spurts. Be ready to print many cards as quickly as possible and get them on the wall.

You must let them discuss among themselves as long as they stay on topic. Keep bringing their attention back to the wall. Keep repeating the definitions they have already come up with.

You should reach the end of the first band by about noon of the first day. Do not leave an incomplete band and break for lunch. It is fairly easy to tell when a committee has run dry. The problem for the co-ordinator is really in not cutting it off too soon.

STAGE FIVE - COMPLETE THE REMAINING BANDS

Be sure to tell the committee that order or sequence does not matter within the specific band they are dealing with at this time. Insist that they stay with one band at a time. Do not accept definitions for other parts of the chart.

This is a trying and exhaustive process at this stage. You must show patience, firmness and consistency.

Do not allow one member to take over. Draw out the less vocal members.

Definitions can be refined as you go along, but insist on consensus rather than one person making the change. Do not allow anyone to touch the cards.

You will probably rearrange the original set of general competencies as the final bands develop. This is a natural part of the process experienced by the author.

It is amazing, to this author at least, how often the attitudes toward the job come out as specific skills. These are mostly ignored in training programs. It may not be easy to operationalize these attitudes as part of the course, but by being included in the chart they do give guidelines to developers. As such, the committee should be encouraged to specify these areas, e.g. getting along, presenting good company image, responsible reporting, punctuality, fairness, codes of ethics, etc.

There is usually some confusion over analytical communication and supervisory skills if they apply to a session. Jobs which are well established tend to be easier to analyse. Technician and technologist occupations are more difficult to deal with. Here is where the co-ordinator's skill with vocabulary, analysis and experience with a wide range of curriculum becomes essential.

The communications requirements of a job usually do not look like any "English" course anyone has ever taken. This is the reason seasoned instructors are not asked to sit on DACUM committees. The co-ordinator must also maintain a neutral position and accept what the committee says, even if those definitions do not match any of the co-ordinator's previous experience.

When does the co-ordinator cut off the definitions? When the work becomes laboured or repetitive, or members begin redefining cards which they have already agreed upon.

STAGE SIX - REVIEWING AND REFINING

This usually occurs before mid-day on the second day. By now the committee is "tuned in" on the task. They have expanded their common lexicon and scope in the use of verbs and imperatives.

The co-ordinator now goes over every card, asking, probing - "exactly what do you mean?", "would another person understand what is meant by this definition?".

Several rewrites usually occur and occasionally a card is dropped or added.

STAGE SEVEN - SEQUENCING THE SKILLS

This usually goes quickly. Many decisions are arbitrary, it making no difference which task or skill is mastered first.

Almost without exception the cards are reversed. That is, the committee stated the simple, primary tasks first which are closest to the General Competencies on the right and the more difficult ones later. The simplest tasks are lined up on the left. They usually get more complex as you read the chart toward the right.

As the work proceeds it becomes evident that if the first portion of the chart on the left side were mastered a person should be employable at a rather low level (say helper or assistant) in the occupation. As one proceeds with the tasks toward the right a higher and higher level of competency in being able to initially deal with the occupation is gained.

Some vertical alignment may be helpful where descriptions are related from different bands, for example "safety" may appear in several bands. If these are aligned vertically they constitute a logical group of learning objectives or a "UNIT" of the course.

The sequencing often follows the logic of the job itself. When sequencing a subject oriented course or program the rationale for the sequence may be quite different. It might depend upon what is imagined as the most interesting sequence; what theory/practice combination seems best based upon experience; or it may follow the classical lines of the discipline, i.e. arithmetic before algebra, analytic geometry before calculus, sentences before paragraphs, logic before ethics, atoms before molecules, etc.

It is interesting to note that another way of sequencing based upon the taxonomy of learning objectives is being used, for example the taxonomies of Bloom and Gagné. Here the cognitive processes are sequenced rather than the skills or content.

STAGE EIGHT - ESTABLISHING LEVELS OF COMPETENCE

How well must each of these skills or abilities be mastered? What degree of importance for job or subject area success is attached to each definition?

This has been handled in a couple of ways. If the committee is highly local and has the time, then these questions can be dealt with pretty specifically. Actual areas of content can be established and standards of acceptance set. This discussion usually takes place at subsequent meetings.

In most cases, however, the committee is a very temporary group and its members are anxious to get back to their primary responsibilities. A simple technique of establishing a LIMITED, MODERATE or SKILLED level of competence works quite well. It is general enough for the committee to agree upon and specific enough for the course developers and instructors to operationalize. A simple L, M or S is elicited from the group for each card.

Most charts developed so far have no indication of this level of ability or competence. It has been left to the developers and instructors to set these levels. This works as long as there is feedback or responses from the employers of the graduates or the people who receive the graduates for further education or training.

The most logical place to obtain these standards are from the committee and future employers. They, however, seem to have difficulty being realistic about their expectations. They want experience, but the schools are equipped to offer training.

Perhaps the best criteria for levels or standards of performance are frequency of task performance and how critical the task is to the success of the whole endeavour. For example, you might hear "I don't care if he can't solder too well, but if he can't read the colour codes of the components, then forget it.".

It may be possible within the framework of managing, organizing and operating a program, while using the chart as the basis, to build in more of the critical experience called for. Day-release, co-op and evening or weekend courses may allow for this.

There is a problem here that must be solved. Each institution, committee and co-ordinator will have to find the best solution for

its individual situation. Perhaps further meetings of the committee can resolve this if you can get them together again.

STAGE NINE - FINAL STRUCTURING AND CONCLUSIONS

When it appears that the whole chart is complete, sequenced and some indication of performance levels worked out, then review each and every card in a narrative fashion which builds a mental picture of the entire endeavour that has been analysed.

Do not allow any wholesale changes, but minor additions, deletions, expansions, etc. should be entertained.

Demonstrate to the committee how the chart now resembles a series of training chunks or courses that allow a person to move through the various levels of the occupation.

Explain once more what will be done with the chart. They must go away convinced that their job has been worthwhile and that the chart will be operationalized and used.

Now is the time to answer their general questions about training, pre-requisites, standards, future plans of the institution, general educational philosophy and anything else that comes up.

Be sure to send letters of thanks with copies of the chart to each member and, where appropriate, to their employers.

PRODUCING AND REPRODUCING THE CHARTS

One last technical note. When the committee leaves, number each card so that they can be transcribed on to DACUM charts.

We use a two-digit code for the General Areas of Competence, i.e. 01 to say 10 or 12.

The sub-skills in each band carry the code of General Area of Competence plus another two digits, i.e. 0101, 0102, 0103, etc. A further two digits could be applied to the next level of analysis.

If the whole chart is given a code, say from the Canadian Classification and Dictionary of Occupations (CCDO) then each definition will have a unique number or code.*

We use an IBM Selectric - 12 pitch, elite typewriter. The blanks are on 11"x17" paper. (See Appendix "A"). Masters are made by either photo-reducing or by having metal plates made (for offset). A regular IBM or Xerox copier will make copies of the 11"x17" in two pieces or a reduced copy.

When a chart is felt to be reasonably permanent then a metal plate is made and 11"x17" card-stock copies are run on offset and given to the students and instructors. If more than a single sheet of 11"x17" is needed, the whole chart is spiral bound making a rather nice package.

There are many ways of setting up and reproducing the charts. Perhaps microfiche or film will be next.

This leads us to the charts themselves and Part IV of this paper.

* SEE EPILOGUE - PART A CODING SUGGESTIONS FROM COLLEGE BIBLIOCENTER

PART IV

CURRENT DACUM CHARTS

Special Note:- Please send copies of any charts you produce to the College Bibliocentre addressed:

DEX (DACUM Chart Exchange)
20 Railside Road
Toronto, Ontario
M3A 1A4

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This Section does not contain the actual charts - file card size data sheets have been made up and classified into 20 general areas according to the Canadian Classifications and Dictionary of Occupations (CCDO). A special section for Academic Upgrading or Basic Training for Skill Development has been identified with Communications, Math, Science, Life Skills and Student Orientation.

How to Use this Section - (There are two lists for cross reference)

1. The alpha list giving the title of the charts, the developer and a Subject/Designator (S/D) number could be searched to identify titles of interest.

2. Use the S/D number to go to the S/D list. Find the matching S/D number that was identified on the alpha list. You will now see what classification that title has been given and what other related charts exist in the same area.

3. Go to the data sheets to obtain more information on the chart you are interested in. You may have to look through

all of the charts in a S/D area to find yours. The information on the charts is as follows:

THE CARDS ARE NUMBERED BUT NOT EXACTLY IN SEQUENCE IN SOME CASES.

(a) Subject/Designator

These are classifications and sub-classifications taken from the CCDO - simply a way of grouping related job fields and occupations.

(b) Level

This information pertains to the level at which the program would be offered. In many cases the author made the best guess possible from the information available. Most charts pertain to Occupational Training. The developers would have to be contacted for more information about pre-requisites or entry levels. Numbers in brackets, e.g. (9,10) indicate grade levels.

(c) Title

This is the exact title given to the chart by the developer.

(d) Date

This is the date the chart was developed. If a date was not provided on the chart and it came from the Prince Edward Island or Nova Scotia area an arbitrary date of 1970 was given. (No earlier charts have been identified up to now.)

(e) By

This is the developer. Where the specific group, branch or division of an institution is not known, the Department of Education or the name of the College is stated. The names in the bibliography of this paper can be matched up

with many of the institutional or government names given under "By" on the data sheet.

(f) CCDO

Many of these numbers are not stated. This work must be done at a later date by persons fully familiar with how occupations were coded or classified. Where a number is given an attempt has been made to be as specific as was considered prudent with the given information.

(g) TPOs

These are the Terminal Performance Objectives or General Areas of Competence exactly as stated on the chart.

(h) Numbers Beside TPOs

Mostly these are two-digit numbers. If a three-digit number is given and the 1st digit is a zero, ignore it. If the first of three digits given is not a zero this is the number that appeared on the chart. Adjustments will have to be made in future for all TPOs to be coded with two digits only.

4. The TPOs will certainly be of interest to developers, but you may want to get a copy of the actual chart. Names of persons who contributed charts are listed with the bibliography of this paper. Most are not equipped nor have time to send out large numbers of charts. It is suggested that you contact the College Bibliocentre, 20 Railside Road, Toronto, Ontario M3A 1A4 - Telephone 416-447-5137. Some charts are over four feet in length!

The College Bibliocentre has agreed to put the charts in a standard format and possibly distribute them on 35 mm. film or michro-fiche.

PLEASE send them copies of any new charts you develop or obtain. This way we can build up the DEX - DACUM Chart Exchange.

5. The purpose of putting the data on file-size cards was so that readers could cut them out and build their own files. You can group or classify them in any number of ways - add information - add new cards, etc.

6. Notes have been added in some cases. These are annotations thought to be useful by the author. You can cut these out as well and glue or staple them to the backs of the appropriate data sheets.

7. CCDO Volumes I and II are available in French and English at Information Canada Bookshops. In Toronto the address is 221 Yonge Street. Volume I is priced at $15.00, and Volume II at $10.00. The books are available by mail from Information Canada, Ottawa. (VOL I ESSENTIAL)

8. We cannot assume that all charts were developed or produced by means similar to those outlined in this paper. That information would have to be obtained from the developer. Where possible, it has been noted on the data sheet whether a DACUM Committee or instructor devised the chart.

9. This whole system of listing and classifying charts was set up mainly to deal with the 100 charts on hand. Changes and refinements are bound to happen. In other words, don't get too "hooked-in" to any one particular information or classification system. Hence the reason for the card file system for readers. Set it up to suit yourself and keep in touch with the Bibliocentre for new additions and developments.

ALPHA LIST OF DACUM CHARTS

	Name of Program	Developed By	S/D No.
1.	Academic Upgrading Communications, (3 Charts) Levels I, II & III	Humber College, Ont.	1, 2, 3
2.	Academic Upgrading Communications, Levels II & III	Georgian College, Ont.	4, 5
3.	Academic Upgrading Communications, Levels II & III	Sask. NewStart	6
4.	Academic Upgrading English Communications Profile, II & III	Northern College, Ont.	7
5.	Academic Upgrading Math General Program	Ontario Eastern Region	19
6.	Academic Upgrading Math, Level II	Georgian College, Ont.	20
7.	Academic Upgrading Math, Levels I & II and Tech. Option	Northern College, Ont.	17,18,21,23
8.	Academic Upgrading Math, Levels II & III	Sask. NewStart	22
9.	Academic Upgrading Math, Levels I, II & III	Humber College, Ont.	13, 14, 15
10.	Academic Upgrading Science, Levels I, II & III	Humber College, Ont.	26, 27, 28
11.	Academic Upgrading Science, Levels II & III	Georgian College, Ont.	29, 30
12.	Accounting Technology	Holland College, P.E.I.	34
13.	Adult Basic Education, Basic Communications	Nova Scotia	8
14.	Adult Basic Education, Basic Math	Nova Scotia	16
15.	Adult Basic Education, Learning Assistance and Monitoring	Nova Scotia	80
16.	Air Conditioner Installer	Job Core	140
17.	Air Conditioning & Refrigeration Mechanic	Job Core	138
18.	Airframe Subassembling	Nova Scotia	116
19.	Antique Restoration	Nova Scotia	69
20.	Appliance Service Repairman	Northern College, Ont.	120
21.	Audio Visual Communications Support for Learning Environment	Nova Scotia	84
22.	Automatic Screw Machine Setter/Operator (Multi-Spindle)	Humber College, Ont	109
23.	Automatic Screw Machine Setter/Operator (Single Spindle)	Humber College, Ont.	108

	Name of Program	Developed By	S/D No.
24.	Baker	Job Core	119
25.	Bartending and Service	A.V.E., Nova Scotia	147
26.	Brake Shear and Press Set-up Operator	Humber College, Ont.	113
27.	Brick and Stone Mason	Job Core	65
28.	BTSD Communications	A.V.E., Nova Scotia	9
29.	BTSD Communications	Dept. of Ed., B.C.	10
30.	BTSD Mathematics	A.V.E., Nova Scotia	24
31.	BTSD Mathematics	Dept. of Ed., B.C.	25
32.	BTSD Science	Dept. of Ed., B.C.	31
33.	Building Materials Sales (4 Charts - Carpentry, Painting, Trades, Maintenance)	Humber College, Ont,	54,55,56,57
34.	Building Supplies Sales	A.V.E., Nova Scotia	143
35.	Business Management	Holland College, P.E.I.	98
36.	Cable-Television Serviceman	Humber College, Ont.	58
37.	Camera Repair Mechanic	Humber College, Ont.	128
38.	Carpenter, Construction	Job Core	60
39.	Carpet Installation	A.V.E., Nova Scotia	53
40.	Cement Mason	Job Core	59
41.	Child Mental Health Service	Atlantic Child Guidance Centre (Nova Scotia)	107
42.	Clerk Typist	Job Core	42
43.	Commercial (Accounting)	Humber College, Ont.	36
44.	Commercial (Accounting)	Northern College, Ont.	35
45.	Commercial (Bookkeeping)	Humber College, Ont.	38
46.	Commercial (Bookkeeping)	Northern College, Ont.	37
47.	Commercial (Business Machines)	Humber College, Ont.	43
48.	Commercial (Shorthand - Take 30)	Humber College, Ont.	40
49.	Commercial (Typing)	Northern College, Ont.	39
50.	Commercial Design	Holland College, P.E.I.	78

	Name of Program	Developed By	S/D No.
51.	Commercial and/or Graphic Artist	Job Core	79
52.	Construction Technology	Holland College, P.E.I.	61
53.	Cook Training	Dept. of Ed., B.C.	149
54.	Cooking	N.S. New Start	151
55.	Custodial Maintenance	Job Core	67
56.	Deckhand Training	N.S. New Start	96
57.	Dining Waitress-Hostess Service	A.V.E., Nova Scotia	150
58.	Domestic Appliance & Repair Service	N.S. New Start	121
59.	Draftsman	Job Core	92
60.	Drywall & Ceiling Erection & Finishing	A.V.E., Nova Scotia	62
61.	Duplicating Machine Operator/ Office Clerk	Job Core	45
62.	Electrical Appliance Repairman	Job Core	122
63.	Electrical Technology	N.S. Dept. of Ed.	86
64.	Electrician	Job Core	125
65.	Electronics Assembler	Job Core	127
66.	Electronic Repair	A.V.E., Nova Scotia	124
67.	Electronics (Home Entertainment)	Humber College, Ont.	123
68.	Electronics Technology	Holland College, P.E.I.	87
69.	English as a Second Language	Humber College, Ont.	12
70.	Executive and Administrative Assistant	Holland College, P.E.I.	99
71.	Florist Assistant	Job Core	76
72.	Food Service and Hotel Administration	Northern College, Ont.	152
73.	Forest Products Scaling	Northern College, Ont.	95
74.	Forestry Filers	Northern College, Ont.	93
75.	Functional Literacy	N.S. New Start	11
76.	Furnace Repairman	Job Core	66
77.	Furniture Upholsterer	Job Core	130
78.	Gas Appliance Repair	Job Core	64

	Name of Program	Developed By	S/D No.
79.	General Nursing Practice	Yarmouth Hospital, N.S.	102
80.	General Sales Clerk	A.V.E., Nova Scotia	142
81.	General Warehousing & Stockroom Work	A.V.E., Nova Scotia	100
82.	Health Care Aide	Northern College, Ont.	106
83.	Heavy Duty Equipment Mechanic	Northern College, Ont.	131
84.	Heavy Duty Equipment Operation	A.V.E., Nova Scotia	49
85.	Heavy Duty Equipment Operator	Sheridan College, Ont.	50
86.	Hotel-Motel Housekeeping Service	A.V.E., Nova Scotia	156
87.	Hotel-Motel Restaurant Management	Holland College, P.E.I.	157
88.	Housekeeping-Homemaking Training	Nova Scotia	155
89.	Indigenous Community Work	A.V.E., Nova Scotia	159
90.	Industrial Instrumentation Technician	Humber College, Ont.	88
91.	Industrial Maintenance Mechanic(Packaging)	Humber College, Ont.	135
92.	Installation Specialist Technician (Carpeting)	Humber College, Ont.	52
93.	Instructional Materials Centre Technician	Humber College, Ont.	82
94.	Instructors of Individualized Programs	Humber College, Ont.	85
95.	Instrumentation Mechanic	Humber College, Ont.	139
96.	Jewelry Handcraft	Nova Scotia	72
97.	Key Punch Operator	Job Core	46
98.	Learner Evaluation & Activity Development	Holland College, P.E.I.	83
99.	Leather Handcraft	Nova Scotia	71
100.	Life Skills	Nova Scotia	32
101.	Local Government and Band Management for Community Development	Dept. of Ed., B.C.	97
102.	Machine Knitting Handcraft	Nova Scotia	74
103.	Machine Operator/Machine Setup Man	Job Core	110
104.	Manufactured Metal Products Assembler/Fabricator	Humber College, Ont.	126

	Name of Program	Developed By	S/D No.
105.	Marine and Small Power Equipment Mechanic	Humber College, Ont.	134
106.	Motor Vehicle Repair (Body)	N.S. New Start	133
107.	Motor Vehicle Repair (Mechanical)	N.S. New Start	132
108.	Nursing Assistant	Northern College, Ont.	105
109.	Office Machine Operator	Job Core	44
110.	Office Machine Repair	Job Core	141
111.	Offset Printer	Job Core	118
112.	Oil Burner Repair and Servicing	Nova Scotia	63
113.	Painter and Paperhanger	Job Core	68
114.	Pharmacy Assistant	Dept. of Ed., B.C.	104
115.	Plastics Production Technology	Holland College, P.E.I.	89
116.	Police Technology	Holland College, P.E.I.	158
117.	Pottery Handcraft	Nova Scotia	73
118.	Practical Nursing	Dept. of Ed., Nova Scotia	103
119.	Precision Instrument Technician	Humber College, Ont.	90
120.	Professional Counselling (School)	A.E.I., Halifax, N.S.	81
121.	Property Mapping	Nova Scotia	91
122.	Psychological Counselling	Univ. of Victoria, B.C.	160
123.	Radio Announcing	A.V.E., Nova Scotia	77
124.	Radio & Television Repairman	Job Core	125.1
125.	Resilient Flooring Specialist	Humber College, Ont.	51
126.	Retail Meatcutting	A.V.E., Nova Scotia	148
127.	Retail Sales Clerk	Job Core	144
128.	Retail Sales Specialist - Carpeting	Humber College, Ont.	146
129.	Sales Specialist - Carpeting	Humber College, Ont.	145
130.	Sheet Metal Worker	Job Core	114
131.	Small Engines Maintenance	Northern College, Ont.	136

	Name of Program	Developed By	S/D No.
132.	Small Gas Engine Repair	Job Core	137
133.	Softwood Lumber Grading	Northern College, Ont.	94
134.	Stenographic	Dept. of Ed., Nfld.	47
135.	Stock Clerk	Job Core	48
136.	Student Orientation	Niagara College, Ont.	33
137.	Trained Homemaker	Dept. of Ed., B.C.	154
138.	Truck Driver (Heavy & Light)	Job Core	117
139.	Typewriting	Humber College, Ont.	41
140.	Upholstering	A.V.E., Nova Scotia	129
141.	Waiter/Waitress	Dept. of Ed., B.C.	153
142.	Warehouseman & Materials Handler	Job Core	101
143.	Weaving & Sewing Handcraft	Nova Scotia	75
144.	Welder	Job Core	115
145.	Welder Fitter	Humber College, Ont.	111
146.	Welding Fabrication	N.S. New Start	112
147.	Wood Handcraft	Nova Scotia	70
148.	Youth Work	Nova Scotia	161

Last Minute Additions -

Machine Shop	Algonquin College May 74
Enquiry and Information Service	Information Canada, Ottawa-July 74
District Management	Information Canada, Ottawa-Nov. 73
Mobile Information Service	Information Canada, Ottawa-Nov. 72

These 4 charts arrived just prior to "press time" and have not been integrated into the system.

Copies will be available at the College Bibliocentre by December 1974.

LIST OF SUBJECT/DESIGNATION HEADINGS AND SUB-HEADINGS

ACADEMIC UPGRADING
- Communications
- Mathematics
- Science
- Life Skills
- Student Orientation

CLERICAL
- Accounting
- Bookkeeping
- Office Machine, EDP Operatios
- Secretarial
- Typing
- Stenographer
- Stock Clerk

CONSTRUCTION
- Excavating
- Floorcovering
- Sales
- Wire Communications
- Other Construction Trades

CREATIVE ARTS
- Antiquer
- Fine and Commercial Arts
- Performing Arts
- Commercial Art

EDUCATION AND TRAINING

ENGINEERING TECHNOLOGY
- Surveyor
- Draftsman

FORESTRY AND LOGGING

FISHING

MANAGEMENT AND ADMINISTRATION

MATERIAL HANDLING

MEDICINE AND HEALTH

METAL MACHINING

METAL SHAPING AND FORMING
- Aircraft Fabricating

MOTOR TRANSPORT

PRINTING

PROCESSING

REPAIRING AND SERVICING
- Appliance Servicing & Repairing
- Electrical/Electronic Repair
- Fabricating and Assembling Metal Products
- Fabricating and Assembling Electrical/Electronic Equipment
- Mechanics and Repairmen - Precision Instruments
- Assembling Textile Products
- Mechanics & Repairmen

SALES
- Carpeting

SERVICES
- Food/Beverage Preparation and Service
- Housekeeping
- Lodging and Accomodation
- Protective Service

SOCIAL SERVICES

SUBJECT/DESIGNATION LIST OF DACUM CHARTS

ACADEMIC UPGRADING

COMMUNICATIONS

1. Academic Upgrading Communications Level I
2. Academic Upgrading Communications Level II
3. Academic Upgrading Communications Level III
4. Academic Upgrading Communications Level II
5. Academic Upgrading Communications Level III
6. Academic Upgrading Communications Levels II & III
7. Communications Profile Levels II and III
8. Basic Communication in a Personalized A.B.E.
9. BTSD Communications
10. BTSD Communications
11. Functional Literacy - Functional Structure of Skill Development
12. English as a Second Language

MATHEMATICS

13. Academic Upgrading Math, Level I
14. Academic Upgrading Math, Level II
15. Academic Upgrading Math, Level III
16. Basic Mathematics in a Personalized A.B.E. Environment
17. Academic Upgrading Level I
18. Academic Upgrading Level II(a)
19. Academic Upgrading General Program
20. Academic Upgrading Math, Level II
21. Academic Upgrading Technical Option, Level II(b)
22. Academic Upgrading Math, Levels II & III
23. Academic Upgrading Business Option, Level II(b)
24. BTSD Mathematics
25. BTSD Mathematics

ACADEMIC UPGRADING (Continued)

SCIENCE

26. Academic Upgrading Science - Level I
27. Academic Upgrading Science - Level II
28. Academic Upgrading Science - Level III
29. Academic Upgrading Science - Level II
30. Academic Upgrading Science - Level III
31. BTSD Science

LIFE SKILLS

32. Life Skills

STUDENT ORIENTATION

33. Student Orientation

CLERICAL

ACCOUNTING

34. Accounting Technology
35. Commercial (Accounting)
36. Commercial (Accounting)

BOOKKEEPING

37. Commercial (Bookkeeping)
38. Commercial (Bookkeeping)

CLERICAL (Continued)

SECRETARIAL

39. Commercial (Typing)
40. Commercial (Shorthand - Take 30)

TYPING

41. Typewriting
42. Clerk Typist

OFFICE MACHINE EDP OPERATORS

43. Business Machines
44. Office Machine Operator
45. Duplicating Machine Operator/Office Clerk
46. Keypunch Operator

STENOGRAPHER

47. Stenographer

STOCK CLERK

48. Stock Clerk

CONSTRUCTION

EXCAVATING

49. Heavy Duty Equipment Operator
50. Heavy Duty Equipment Operator

FLOORCOVERING

51. Resilient Flooring Specialist
52. Installation Specialist Technician (Carpeting)
53. Carpet Installation

SALES

54. Building Material Sales - Related Trades & Business Aspects
55. Building Materials Sales - Painting
56. Building Materials Sales - Maintenance
57. Building Materials Sales - Carpentry, New and Repairs

WIRE COMMUNICATIONS

58. Cable-Television Serviceman

OTHER CONSTRUCTION TRADES

59. Cement Mason
60. Carpenter, Construction
61. Construction Technology
62. Drywall and Ceiling Erection and Finishing
63. Oil Burner Repair and Servicing
64. Gas Appliance Repair
65. Brick and Stone Mason
66. Furnace Repairman
67. Custodial Maintenance
68. Painter and Paperhanger

CREATIVE ARTS

ANTIQUER

69. Antique Restoration

FINE AND COMMERCIAL ARTS

70. Wood Handcraft
71. Leather Handcraft
72. Jewelry Handcraft
73. Pottery Handcraft
74. Machine Knitting Handcraft
75. Weaving and Sewing Handcraft
76. Florist Assistant

PERFORMING ARTS

77. Radio Announcing

COMMERCIAL ART

78. Commercial Design
79. Commercial and/or Graphic Artist

EDUCATION AND TRAINING

80. Learning Assistance & Monitoring in a Personalized Adult Basic Education Environment
81. Professional Counselling (School)
82. Instructional Materials Centre Technician
83. Learner Evaluation and Activity Development (Draft Copy)
84. Audio-Visual Communications Support for Learning Environment
85. Instructors of Individualized Programs

ENGINEERING TECHNOLOGY

86. Electrical Technology
87. Electronics Technology
88. Industrial Instrumentation Technician
89. Plastics Production Technology
90. Precision Instrument Technician

SURVEYOR

91. Property Mapping

DRAUGHTSMAN

92. Draftsman

FORESTRY AND LOGGING

93. Forestry Filers
94. Softwood Lumber Grading
95. Forest Products Scaling

FISHING

96. Deckhand Training

MANAGEMENT AND ADMINISTRATION

97. Local Government and Band Management for Community Development
98. Business Management
99. Executive and Administrative Assistant

MATERIAL HANDLING

100. General Warehousing Stockroom Work
101. Warehouseman and Materials Handler

MEDICINE AND HEALTH

102. General Nursing Practice
103. Practical Nursing
104. Pharmacy Assistant
105. Nursing Assistant
106. Occupational Profile: Health Care Aide
107. Child Mental Health Service

METAL MACHINING

108. Automatic Screw Machine Setter/Operator - Single Spindle
109. Automatic Screw Machine Setter/Operator - Multi-Spindle
110. Machine Operator/Machine Setup Man

METAL SHAPING AND FORMING

111. Welder Fitter
112. Welding Fabrication
113. Brake Shear and Press Set-Up Operator
114. Sheet Metal Worker
115. Welder

AIRCRAFT FABRICATING

116. Airframe Subassembling

MOTOR TRANSPORT

117. Truck Driver (Heavy and Light)

PRINTING

118. Offset Printer

PROCESSING

FOOD, BEVERAGE AND RELATED PROCESSING

119. Baker

REPAIRING AND SERVICING (See also Construction)

APPLIANCE SERVICING AND REPAIRING

120. Appliance Service Repairman - Occupational Profile
121. Domestic Appliance and Repair Service
122. Electrical Appliance Repair

ELECTRICAL/ELECTRONIC REPAIR

123. Electronics - (Home Entertainment) Radio & T.V. Repair
124. Electronic Repair
125. Electrician
125.1 Radio and Television Repairman

FABRICATING AND ASSEMBLING METAL PRODUCTS

126. Manufactured Metal Products Assembler/Fabricator

FABRICATING AND ASSEMBLING - ELECTRICAL/ELECTRONIC EQUIPMENT

127. Electronics Assembler

MECHANICS & REPAIRMEN - PRECISION INSTRUMENTS

128. Camera Repair Mechanic

REPAIRING AND SERVICING (Continued)

ASSEMBLING TEXTILE PRODUCTS

129. Upholstering
130. Furniture Upholsterer

MECHANICS & REPAIRMEN

131. Heavy Duty Equipment Mechanic
132. Motor Vehicle Repair, (Mechanical) -MVR
133. Motor Vehicle Repair, (Body) - MVR
134. Marine and Small Power Equipment Mechanic
135. Industrial Maintenance Mechanic (Packaging)
136. Small Engines Maintenance
137. Small Gas Engine Repair
138. Air Conditioning and Refrigeration Mechanic
139. Instrumentation Mechanic
140. Air Conditioning Installer
141. Office Machine Repair

SALES

142. General Sales Clerk
143. Building Supplies Sales (See also Construction)
144. Retail Sales Clerk

CARPETING

145. Sales Specialist - Carpeting
146. Retail Sales Specialist (Carpeting)

SERVICES

FOOD/BEVERAGE PREPARATION AND SERVICE

147. Bartending and Service
148. Retail Meatcutting
149. Cook Training
150. Dining Waitress - Hostess Service
151. Cooking
152. Food Service & Hotel Administration - Parts 1 & 2
153. Waiter/Waitress

HOUSEKEEPING

154. Trained Homemaker
155. Housekeeping-Homemaking Training

LODGING

156. Hotel-Motel Housekeeping Service
157. Hotel-Motel Restaurant Management

PROTECTIVE SERVICE

158. Police Technology

SOCIAL SERVICES

159. Indigenous Community Work
160. Psychological Counselling
161. Youth Work

A C A D E M I C U P G R A D I N G

COMMUNICATIONS

MATHEMATICS

SCIENCE

LIFE SKILLS

STUDENT ORIENTATION

Subject/Designation - COMMUNICATIONS

Level - ADULT - Academic Upgrading I & II (0-4; 5-8)

Title - Academic Upgrading Communications Level 1

By - Humber College, Ontario. May, 1974.

TPOs: CCDO 9617-000-00, 9601-000-00

301 - WORD MEANING - Use Words in Context
311 - WORD ANALYSIS - Use Correct Grammatical Form of Words
302 - LISTENING SKILLS - Follow Oral Directions
303 - LITERAL COMPREHENSION - Read to Extract Facts
313 - INTERPRETIVE COMPREHENSION - Read to Make Inferences
304 - SPEAKING SKILLS - Communicate Orally
305 - WRITING SKILLS - Write Sentences
315 - CORRESPONDENCE SKILLS - Correspond in Everyday Matters

NOTE - Mainly derived from Saskatchewan New Start BLADE and LINC programs.

Subject/Designation - COMMUNICATIONS

Level - ADULT - Academic Upgrading III (9-10)

Title - Academic Upgrading Communications Level II

By - Humber College, Ontario. May, 1974.

TPOs: CCDO No. 9603-000-00

312 - LISTENING SKILLS - Listen to Spoken Selections to Identify Main Idea with Relevant Details
323 - FUNCTIONAL READING - Read General Interest Materials
333 - DEVELOPMENTAL READING - Interpret and Evaluate Printed Materials of General Interest
343 - BUSINESS READING - Answer Questions Relating to Forms, Charts, Manuals
314 - SPEAKING SKILLS - Speak in Formal and Informal Situations
325 - WRITING SKILLS - Write Compositions
306 - INTEGRATED SKILLS - Combine Communication Skills in Essays and Reports
307 - HONOURS OPTION

3

Subject/Designation - COMMUNICATIONS

Level - ADULT - Academic Upgrading IV (11-12)

Title - Academic Upgrading Communications Level III

By - Humber College, Ontario. May, 1974.

TPOs: CCDO No. 9605-000-00

322 - LISTENING SKILLS - Listen to Everyday Speech
353 - READING SKILLS - Read Various Materials
324 - SPEAKING SKILLS - Speak with Clarity and Persuasiveness
335 - WRITING SKILLS - Present a Clear Point of View in a Formal Essay
316 - INTEGRATED SKILLS - Combine all Skills and Resources to Research and Solve Problems
326 - INTEGRATED SKILLS MASS MEDIA - Apply Integrated Skills to Mass Media
317 - HONOURS OPTION

4

Subject-Designation - COMMUNICATIONS

Level - ADULT - Academic Upgrading III (9-10)

Title - Academic Upgrading Communications Level II

By - Georgian College, Ontario. 1973.

TPOs: CCDO No. 9603-000-00

01 - STUDY SKILLS
02 - WORD SKILLS
03 - BASIC WRITING SKILLS
04 - ORGANIZATIONAL SKILLS
05 - APPLIED SKILLS
06 - APPLIED READING SKILLS
07 - ORAL SKILLS
08 - INTERMEDIATE WRITING SKILLS
09 - ADVANCED WRITING SKILLS

Subject/Designation - COMMUNICATIONS
Level - ADULT - Academic Upgrading IV (11-12)
Title - Academic Upgrading Communications Level III
By - Georgian College, Ontario. 1973.
TPOs: CCDO No. 9605-000-00

5

01 - APPLYING STRUCTURAL SKILLS
02 - WRITING SKILLS
03 - LITERATURE
04 - ORAL AND LISTENING SKILLS
05 - STUDY SKILLS

Subject/Designation - COMMUNICATIONS
Level - ADULT - Academic Upgrading II & III (5-10)
Title - Communications Profile Level II and III
By - Northern College, Ontario. 1973
TPOs: CCDO No. 9601-000-00 - 9603-000-00

7

01 - LISTEN TO EXTRACT INFORMATION AND MEANING
02 - ARGUE FORCEFULLY USING PROOFS
03 - ADDRESS A GROUP AND PARTICIPATE IN GROUP DISCUSSIONS
04 - READ TECHNICAL, VOCATIONAL, GENERAL INTEREST MATERIALS
05 - WRITE MULTI-PARAGRAPH PASSAGES
06 - WRITE LETTERS AND REPORTS

Subject/Designation - COMMUNICATIONS
Level - ADULT - Academic Upgrading Levels II & III (5-10)
Title - Academic Upgrading Communications Levels II & III
By - Sask. NewStart Corp. Oct. 1972
CCDO No. _____

TPO's

Developmental Reading

01 - Word Analysis
02 - Word Meaning
03 - Literal Comprehension
04 - Interpretive Comprehension
05 - Evaluative Comprehension

Functional Reading

01 - Learning Skills
02 - Structural Skills
03 - Correspondence Skills
04 - Media Skills

NOTE - This is a part of the LINC Program.

Subject/Designation - COMMUNICATIONS

Level - ADULT - Academic Upgrading (BASIC)

Title - Basic Communication in a Personalized A.B.E. Environment

By - Nova Scotia Newstart Inc. March, 1970

TPOs: CCDO No. 9600

8

01 - LISTEN TO & INTERPRET ORAL MESSAGES & COMMUNICATION
02 - PRESENT ORAL MESSAGES & COMMUNICATION
03 - READ & INTERPRET WRITTEN MESSAGES & COMMUNICATION
04 - PREPARE WRITTEN MESSAGES
05 - APPLY NON-VERBAL COMMUNICATION TECHNIQUES
06 - COMMUNICATE EFFECTIVELY IN WORK & OTHER ROLES
07 - COMMUNICATE USING INTERPERSONAL SKILL
08 - USE COMMUNICATION DEVICES & SYSTEMS
09 - UTILIZE INFORMATION SYSTEMS & RESOURCES

4

Subject/Designation - COMMUNICATIONS

Level - ADULT Academic Upgrading (BASIC)

Title - BTSD COMMUNICATIONS

By - Adult Vocational Education, Province of Nova Scotia. Novmeber, 1973.

TPOs: CCDO No. 9600

9

01 - READINESS
02 - IDENTIFYING, PRONOUNCING & WRITING SYMBOLS IN WORDS
03 - SPELLING WORDS BY SYLLABLES AND RULES
04 - PRONOUNCING, SPELLING AND DEFINING WORDS
05 - READING WITH EFFICIENCY AND COMPREHENSION
06 - IDENTIFY STRUCTURE AND MEANING OF SENTENCES
07 - WRITING CLEAR, CONCISE SENTENCES
08 - IDENTIFYING MEANING OF PARAGRAPHS & COMPOSITIONS
09 - WRITING CLEAR CONCISE PARAGRAPHS & COMPOSITIONS
10 - LOCATING SPECIFIC INFORMATION
11 - PRACTICAL APPLICATION OF WRITING
12 - LISTENING
13 - SPEAKING

Subject/Designation - COMMUNICATIONS

Level - ADULT - Academic Upgrading II, III, IV (5-12)

Title - BTSD COMMUNICATIONS

By - Department of Education,
Curriculum Development Branch,
Province of British Columbia. May, 1973.

TPOs: CCDO No. 9600

10

01 - LISTEN TO AND INTERPRET ORAL COMMUNICATION
02 - COMMUNICATE ORALLY
03 - LISTEN TO, OBSERVE AND INTERPRET FILM & TELEVISION
04 - READ AND INTERPRET WRITTEN COMMUNICATION
05 - COMMUNICATE IN WRITING
06 - STUDY EFFECTIVELY

Subject/Designation - COMMUNICATIONS

Level - ADULT - Academic Upgrading (FUNCTIONAL)

Title - Functional Literacy - Functional Structure of Skill Development

By - Nova Scotia Newstart Inc. February, 1971.

TPOs: CCDO No. 9600

11

01 - SPEAK - Enunciate & Pronounce
02 - SPEAK - Express & Describe
03 - COMMUNICATE NON-VERBALLY - Project
04 - COMMUNICATE NON-VERBALLY - Interpret
05 - LISTEN - Extract Information & Meaning
06 - LISTEN - Attend (Tune-In)
07 - READ - Decode Symbolic Materials
08 - READ - Comprehend Symbolic Materials
09 - READ - Find & Organize Information for Utilization
10 - WRITE - Write a Letter
11 - WRITE - Construct Components
12 - WRITE - Compose Complete Selections

NOTE- Functional Literacy Chart is NOT a DACUM Chart as such. It is an analysis of basic language or a Subject Taxonomy which can be used to develop ANY BASIC COMMUNICATIONS PROGRAM.

Subject/Designation - COMMUNICATIONS

Level - ADULT - Non-English Speaking (BASIC)

Title - English as a Second Language

By - Humber College, Ontario. May, 1974.

TPOs: CCDO No. 9611-000-01

12

01 - KNOWLEDGE OF TRANSFORMS WITH ALL ITEMS AND SENTENCE PATTERNS TAUGHT

02 - SENTENCE PATTERNS

03 - LISTEN; ACCEPTABLY SPEAK, WRITE & SPELL - NAMES, ADDRESSES, VOCABULARY WORDS & ITEMS TAUGHT

04 - ORALLY ACCEPTABLE DISCUSSION RE: CDN GEO, HIST. & CIVICS, DEMOCRATIC NOTE

05 - TO DETERMINE STUDENT'S PLACE WITHIN CURRICULUM COURSE - "STREAMING"

06 - LISTEN; WRITE; FORM & SPEAK ALL ITEMS AND PATTERNS 1 to 7 ORAL ACCEPTANCE - MODULE 1 (Mod.1)

07 - MINIMAL FLUENCY IN ALL ITEMS AND PATTERNS TAUGHT LESS 60% - REPEAT MODULE 1 (Mod.2)

. . . (over)

Card 2 - COMMUNICATIONS - English as a Second Language

TPOs:

08 - FLUENCY IN ALL ITEMS TAUGHT POSSIBLE CERTIFICATION - TEST MODULE III - 60% REQUIRED (Mod.3)

09 - ACCEPTABLE FLUENCY IN ALL ITEMS FORMATION OF ORIGINAL THOUGHTS (Mod.4)

NOTES

1. TPO 05 is a diagnostic placement type testing while 06- 09 make up the 4 main components (Modules) of the course. TPO's 01- 04 outline the basic structures, skills and content for 06- 09.

2. This course is an adaptation of the Canadian Civil Service Program.

13

Subject/Designation - MATHEMATICS
Level - ADULT Academic Upgrading I,II (0-4)(5-8)
Title - Academic Upgrading Math, Level I
By - Humber College, Ontario. May, 1974
TPOs: CCDO No. 9617.000.02,9601.000.00
451 - PERFORM OPERATIONS WITH WHOLE NUMBERS
452 - PERFORM OPERATIONS WITH FRACTIONS
453 - PERFORM OPERATIONS WITH DECIMALS
454 - SOLVE PERCENT PROBLEMS
455 - SOLVE MEASUREMENT PROBLEMS
456 - SOLVE PERIMETER, AREA AND VOLUME PROBLEMS

14

Subject/Designation - MATHEMATICS
Level - ADULT Academic Upgrading III (9 & 10)
Title - Academic Upgrading Math Level II
By - Humber College, Ontario. May, 1974
TPOs: CCDO No. 9603.000.00
401 - PERFORM BASIC OPERATIONS WITH WHOLE NUMBERS
402 - PERFORM BASIC OPERATIONS WITH FRACTIONS
403 - PERFORM BASIC OPERATIONS WITH DECIMALS
404 - SOLVE PERCENT PROBLEMS
405 - SOLVE PERIMETER, AREA AND VOLUME PROBLEMS
406 - SOLVE PROBLEMS INVOLVING RATIO & PROPORTION
407 - PERFORM OPERATIONS WITH SIGNED NUMBERS
408 - CALCULATE USING SCIENTIFIC NOTATION
409 - PERFORM OPERATIONS WITH ALGEBRAIC TERMS
410 - SOLVE LINEAR EQUATIONS
(Cont'd on Card 2)

Subject/Designation - MATHEMATICS

Level - ADULT Academic Upgrading III (9 & 10)

Title - Academic Upgrading Math Level II - Card 2 of 2

TPOs - Continued

411 - REARRANGE FORMULA

412 - DRAW AND ANALYSE GRAPHS

413 - SOLVE GEOMETRIC PROBLEMS

414 - SOLVE SYSTEMS OF LINEAR EQUATIONS

415 - PERFORM BASIC OPERATIONS WITH POLYNOMIALS

416 - SOLVE WORD PROBLEMS ALGEBRAICALLY

Subject-Designation - MATHEMATICS

Level - ADULT Academic Upgrading IV (11 & 12)

Title - Academic Upgrading Math Level III

By - Humber College, Ontario. May, 1974.

TPOs: CCDO No. 9605-000-00

15

417 - FACTOR POLYNOMIALS

418 - PERFORM OPERATIONS USING POWERS

419 - PERFORM BASIC OPERATIONS WITH RADICALS

420 - SOLVE PROBLEMS INVOLVING RIGHT TRIANGLES & VECTORS

421 - SOLVE PROBLEMS INVOLVING OBLIQUE TRIANGLES

422 - SOLVE PROBLEMS DEALING WITH LINES

423 - PERFORM CALCULATIONS USING LOGARIGHMS

424 - PERFORM BASIC OPERATIONS WITH RATIONAL ALGEBRAIC EXPRESSIONS

425 - SOLVE INEQUALITIES & NON-LINEAR EQUATIONS

(Cont'd on Card 2)

17

Subject-Designation - MATHEMATICS
Level - ADULT Academic Upgrading II (5 to 8)
Title - Academic Upgrading Level I
By - Northern College, Ontario. May, 1974
TPOs: CCDO No. 9601.000.00

201 - WHOLE NUMBER REVIEW
202 - SOLVE FRACTIONS PROBLEMS
203 - SOLVE DECIMALS PROBLEMS
204 - SOLVE PERCENTAGE PROBLEMS
205 - SOLVE SQUARE ROOT PROBLEMS
206 - SOLVE METRIC SYSTEM PROBLEMS
211 - SOLVE PRACTICAL MEASURE PROBLEMS
212 - SOLVE AREA PROBLEMS
213 - CALCULATE VOLUME
214 - COMPUTATE CONSUMER APPLICATIONS

18

Subject/Designation - MATHEMATICS
Level - ADULT Academic Upgrading III (9 only)
Title - Academic Upgrading Level IIa
By - Northern College, Ontario. May, 1974
TPOs: CCDO No. 9603.000.00

300 - BASIC MATH REVIEW
301 - ALGEBRAIC NOTATION PROBLEMS
302 - SOLVE SIGNED NUMBERS PROBLEMS
303 - SOLVE ALGEBRAIC MULTIPLICATION PROBLEMS
304 - SOLVE ALGEBRAIC DIVISION PROBLEMS
305 - SOLVE ALGEBRAIC EQUATIONS PROBLEMS
306 - SOLVE RATIO, PROPORTION & PERCENTAGE PROBLEMS
307 - SOLVE BASIC MENSURATION PROBLEMS

19

Subject/Designation - MATHEMATICS

Level - ADULT - Academic Upgrading III, IV (9-12)

Title - Academic Upgrading General Program

By - Ontario Eastern Region CAATS December, 1973.

TPOs: CCDO No. 9603-000-00, 9605-000-00

01 - SOLVE ARITHMETIC PROBLEMS - Whole Numbers
02 - SOLVE ARITHMETIC PROBLEMS - Fractions
03 - SOLVE ARITHMETIC PROBLEMS - Decimals
04 - SOLVE ARITHMETIC PROBLEMS - Percent
05 - SOLVE MENSURATION PROBLEMS
06 - SOLVE GEOMETRY PROBLEMS
07 - SOLVE ANALYTIC GEOMETRY PROBLEMS
08 - SOLVE ALGEBRAIC PROBLEMS
09 - SOLVE TRIGONOMETRY PROBLEMS

20

Subject-Designation - MATHEMATICS

Level - ADULT - Academic Upgrading Level III (9,10)

Title - Academic Upgrading Math Level II

By - Georgian College, Ontario. 1973

TPOs: CCDO No. 9603-000-00

01 - COMPUTATIONAL SKILL
02 - MEASUREMENTS
03 - INTEGERS & RATIONALS
04 - INTRODUCTORY ALGEBRA
05 - PERIMETER, AREA, VOLUME
06 - ALGEBRA II
07 - GEOMETRY
08 - STATISTICS
09 - WORD PROBLEMS

21

Subject/Designation - MATHEMATICS

Level - ADULT Academic Upgrading For Technical III (10 only)

Title - Academic Upgrading Technical Option Level IIb

By - Northern College, Ontario. May, 1974

TPOs: CCDO No. 9603-000-00

331 - SOLVE MENSURATION PROBLEMS
332 - SOLVE METRIC SYSTEM PROBLEMS
333 - COMPUTE RATIO, PROPORTION AND PER CENT
334 - CALCULATE INTEREST
335 - CALCULATE BANKING AND BORROWING TRANSACTIONS
336 - COMPUTE ARITHMETIC PROBLEMS FOR RETAILING
337 - CALCULATE COMMISSIONS
338 - COMPUTE PROFIT AND LOSS TRANSACTIONS

23

Subject-Designation - MATHEMATICS

Level - ADULT Academic Upgrading for Commercial III (10 only)

Title - Academic Upgrading Business Option Level IIb

By - Northern College, Ontario. May, 1974

TPOs: CCDO No. 9603-000-00

311 - SOLVE MENSURATION PROBLEMS
312 - SOLVE GEOMETRY PROBLEMS
313 - SOLVE TRIGONOMETRY PROBLEMS
314 - REVIEW BASIC ALGEBRA
315 - SOLVE WORD PROBLEMS ONE UNKNOWN
316 - SOLVE EQUATIONS - TWO UNKNOWNS
317 - SOLVE EQUATION GRAPHS PROBLEMS
318 - COMPUTATE RATIO, PROPORTION AND PERCENTAGE
319 - DRAW AND SOLVE REGULAR GRAPH PROBLEMS
320 - SOLVE FACTORING PROBLEMS - ALL TYPES

SUBJECT/DESIGNATION - MATHEMATICS

Level - ADULT - Academic Upgrading (BASIC)

Title - BTSD Mathematics

By - Adult Vocational Education,
Province of Nova Scotia. November, 1973.

TPOs: CCDO No. 9600

24

01 - READING AND WRITING
02 - ADDING
03 - SUBTRACTING
04 - MULTIPLYING
05 - DIVIDING
06 - SOLVING PROBLMES
07 - ACCOUNTING
08 - DRAWING AND MEASURING
09 - CALCULATING BY FORMULAE

Subject/Designation - MATHEMATICS

Level - ADULT Academic Upgrading I,II,III,IV (0-12)

Title - BTSD MATHEMATICS

By - Department of Education,
Curriculum Development Branch,
Province of British Columbia. August, 1972.

TPOs: CCDO No. 9609

(Note:- Includes core; technical and non-technical options)

25

01 - SOLVE PROBLEMS USING ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION OF WHOLE NUMBERS
02 - SOLVE PROBLEMS USING ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION OF FRACTIONS
03 - SOLVE PROBLEMS USING RATIO AND PROPORTIONS
04 - SOLVE PROBLEMS USING ADDITION, SUBTRACTION, MULTIPLICATION AND DIVISION OF DECIMALS
05 - SOLVE PROBLEMS INVOLVING PERCENT
06 - SOLVE PROBLEMS INVOLVING ROOTS AND POWERS

. . . see Card # 2

25
CONTINUED

Subject/Designation -

Level - ADULT Academic Upgrading I,II,III,IV (0-12)

Title - BTSD MATHEMATICS Card 2 of 2

TPO's -(Cont'd)

07 - SOLVE PROBLEMS INVOLVING MEASUREMENT OF TIME, DISTANCE, WEIGHT, AREA AND VOLUME (Imperial and Metric)
08 - SOLVE PROBLEMS USING GEOMETRY
09 - SOLVE PROBLEMS USING GRAPHS
10 - SOLVE PROBLEMS USING ALGEBRA
11 - SOLVE PROBLEMS USING TRIGONOMETRY
12 - READ, INTERPRET AND APPLY STATISTICS
13 - APPLY MATHEMATICS TO BUSINESS PROBLEMS
14 - USE CALCULATING DEVICES AND MATHEMATICAL TABLES

22

Subject/Designation - MATHEMATICS

Level - ADULT - Academic Upgrading II & III (5-10)

Title - Academic Upgrading Math., Levels II & III

By - Sask. NewStart Corp. Oct. 1972

CCDO No. _____

TPO's

01 - Whole Numbers
02 - Fractions
03 - Decimals
04 - Percent
05 - Measurement
06 - Perimeter, Area, Volume
07 - Geometry
08 - Statistics
09 - Integers & Rationals
10 - Introductory Algebra

NOTE - This is a part of the LINC Program.

Subject/Designation SCIENCE (Reasoning & Problem Solving)

Level - ADULT Academic Upgrading II (5-8)

Title - Academic Upgrading Science - Level I

By - Humber College, Ontario. May, 1974.

TPOs: CCDO No. 9601-000-00

003 - ANALYSE A PROBLEM

004 - OBTAIN INFORMATION FROM VARIOUS SOURCES

26 005 - ORGANIZE THE DATA OBTAINED

006 - INTERPRET OBSERVATIONS & MEASUREMENTS

Note:-This chart is a Matrix. The TPOs listed above state the simple learning processes while specific skills in science are listed across the top of the chart, i.e. Observation, Classification, Space-time Relationships, Using Numbers, Communicating, Measuring, Infering, Predicting.

Subject/Designation - SCIENCE (Reasoning & Problem Solving)

Level - ADULT Academic Upgrading III (9-10)

Title - Academic Upgrading Science Level II

By - Humber College, Ontario. May, 1974.

TPOs: CCDO No. 9603-000-00

011 - DEVELOPS SCIENTIFIC ATTITUDE

27 012 - IDENTIFY THE PROBLEM

013 - ANALYSE THE PROBLEM

014 - OBTAIN INFORMATION FROM VARIOUS SOURCES

015 - ORGANIZE THE DATA OBTAINED

016 - INTERPRET ORGANIZED DATA

017 - TEST THE HYPOTHESIS

018 - FORMULATE A CONCLUSION

Note:-This chart is a Matrix. The TPOs listed above state the generic academic skills or key thinking & problem solving processes required while specific content related skills are listed across the top of the chart; i.e. Nature of Scientific Enquiry, Manual Skills, Measurement, Matter (Basic), Atomic Structure (Basic), Bonding (Basic), Life, Cellular Introduction, Ecology, Human Systems, Simple Energy Forms, Elementary Mechanics - options are noted.

Subject/Designation - SCIENCE(Reasoning & Problem Solving)
Level - ADULT Academic Upgrading IV (11-12)
Title - Academic Upgrading Science Level III
By - Humber College, Ontario. May, 1974.
TPOS: CCDO No. 9605.000.00

28

021 - DEVELOPS SCIENTIFIC ATTITUDE
022 - IDENTIFY THE PROBLEM
023 - ANALYSE THE PROBLEM
024 - OBTAIN INFORMATION FROM VARIOUS SOURCES
025 - ORGANIZE DATA OBTAINED
026 - INTERPRET ORGANIZED DATA
027 - TEST THE HYPOTHESIS
028 - FORMULATE A CONCLUSION

NOTE:- This chart is a Matrix. The TPOs listed above state the generic academic skills or key-thinking and problem-solving processes required while specific content related skills are listed across the top of the chart, i.e. Nature of Scientific Enquiry, Kinematics, Dynamics, Atomic Structure, Bonding, Classification of Elements, Manual Skills, Electrical Fundamentals, Electrical Circuitry, Electromagnetism, Vectorial Analysis, Nomenclature & Formulae, Equations, Matter (Advanced) - options are noted.

29

Subject/Designation - SCIENCE
Level - ADULT - Academic Upgrading III (9-10)
Title - Academic Upgrading Science - Level II
By - Georgian College, Ontario. May, 1974.
TPOs: CCDO No. 9603.000.00

01 - INTRODUCTION TO SCIENCE
02 - BIOLOGY
03 - MEASUREMENTS
04 - BASIC CHEMISTRY
05 - ELECTRICITY
06 - MECHANICS
07 - HEAT
08 - SOUND
09 - LIGHT

30

Subject/Designation - SCIENCE
Level - ADULT - Academic Upgrading IV (11-12)
Title - Academic Upgrading Science Level III
By - Georgian College, Ontario. May, 1974.
TPOs: CCDO No. 9605.000.00

01 - MECHANICS
02 - ELECTRICITY
03 - ELECTRONICS
04 - NUCLEAR PHYSICS
05 - LIGHT - LEVEL 2
06 - HEAT - LEVEL 2

31

Subject-Designation - SCIENCE

Level - ADULT - Academic Upgrading III,IV (9-12)

Title - BTSD SCIENCE

By - Department of Education,
Curriculum Developments Branch,
Province of British Columbia. November, 1972.

TPOs: CCDO No. 9600

01 - GENERAL SCIENCE - Relate and Apply Principles of Life, Health & Physical Science to One's Environment

02 - PHYSICS - Conduct Experiments and Solve Problems Involving Heat, Light, Sound

03 - PHYSICS - Conduct Experiments and Solve Problems Involving Applied Mechanics

04 - PHYSICS - Conduct Experiements and Solve Problems Involving Magnetism and Electricity

05 - CHEMISTRY - Conduct Experiments and Solve Problems Involving Applied Chemistry (Cont'd on Card 2)

Subject/Designation - SCIENCE

Level - ADULT - Academic Upgrading III,IV (9-12)

Title - BTSD SCIENCE Card 2 of 2

TPOs - Cont'd

06 - BIOLOGY - To Relate Function to Structure in Animals with Emphasis on Man

07 - BIOLOGY - To Relate Function to Structure in Plants

08 - BIOLOGY - Apply Principles of Ecology to Man's Place in the World

09 - BIOLOGY - Apply Principles of Genetics and Evolution

10 - DEFINE AND APPLY SCIENTIFIC METHOD (Integrated throughout Program)

NOTE:-Core is General Science - Physics, Chemistry and Biology are options as required.
Uses tracks instead of behavioural definitions or tasks

32

Subject/Designation - LIFE SKILLS
Level - Academic Upgrading - Adult Education
Title - Life Skills
By - Nova Scotia Dept. of Education 1970
TPOs: CCDO No. 9600

01 - Maintain Living Environment
02 - Lead a Constructive Home Life
03 - Participate & Fit Into Community
04 - Lead A Constructive Working Life
05 - Manage Personal Finances
06 - Be a Wise Consumer
07 - Practice & Contribute to Social Order
08 - Use Community Resources & Services
09 - Continually Change & Develop
10 - Maintain Personal Well-Being
11 - Communicate Effectively
12 - Use Math Effectively

33

Subject/Designation - STUDENT ORIENTATION
Level - Preparation for Occupation Training At Any School
Title - Student Orientation
By - Niagara College, Ontario. 1974
TPOs: CCDO No. 9600

01 - School Organization and Regulations
02 - Physical Plan Orientation
03 - Learning Resources and Materials
04 - Placement Testing
05 - Learning Environment
06 - Counselling Orientation
07 - Health Orientation
08 - Classroom Integration
09 - Evaluation

CLERICAL

ACCOUNTING

BOOKKEEPING

SECRETARICAL

TYPING

STENOGRAPHER

STOCK CLERK

Subject/Designation - ACCOUNTING

Level - Post-Secondary - Technology

Title - Accounting Technology

By - Holland College,
Prince Edward Island. February, 1973.

TPOs: CCDO No. _____

34

01 - Manage Government Taxation & Levy Returns
02 - Operate Accounting Systems
03 - Prepare & Analyze Financial Reports
04 - Utilize Business Machines & Computers
05 - Apply Business Mathematics & Statistical Calculations for Accounting Purposes
06 - Identify Business Law
07 - Communicate Information
08 - Participate in Managerial Functions
09 - Apply Economics to Business Decisions
10 - Practice Human Relations in Business

Subject/Designation - ACCOUNTING

Level - Occupational Training (40 weeks)

Title - Commercial (Accounting)

By - Northern College, Ontario. 1972.

TPOs: CCDO No. _____

35

01 - COMPLETE ALL ACCOUNTING WORK, THROUGH THE ACCOUNTING CYCLE
02 - FILE ALPHABETICALLY AND NUMERICALLY. USE VARIOUS OFFICE MACHINES AND COMMUNICATE ON GENERAL BUSINESS ADMINISTRATION
03 - COMMUNICATE EFFECTIVELY IN THE WORK ENVIRONMENT
04 - TYPE BUSINESS FORMS AND LETTERS
05 - SOLVE PROBLEMS IN BUSINESS MATHEMATICS
06 - PREPARE FINANCIAL STATEMENTS
07 - RELATE THE TECHNIQUES OF MARKETING RESEARCH
08 - DESCRIBE THE DEVELOPMENT AND TYPES OF LAW
09 - SOLVE PROBLEMS IN BUSINESS MATHEMATICS
10 - COMPILE AND ANALYZE ECONOMIC DATA AND APPLY ECONOMIC PRINCIPLES

2.

Subject/Designation - ACCOUNTING

Level - Occupational Training (40 weeks)

Title - COMMERCIAL (ACCOUNTING)

By - Humber College, Ontario 1974

CCDO No. 4131-000-01

TPOs:

36

201 - Complete the Elementary Accounting Cycle
202 - Complete the Basic Accounting Cycle
203 - Complete Practical Work
204 - Complete the Integrated Accounting Cycle
205 - Complete Financial Statements
206 - Prepare Financial Statements

2.

Subject/Designation - CLERICAL - BOOKKEEPING

Level - Occupational Training

Title - Commercial (Bookkeeping)

By - Humber College, Ontario 1974

CCDO No. 4141-110-00

TPOs:

38

301 - To prepare Simple Co-ordinated Financial Statements
302 - To Complete the Basic Accounting Cycle
303 - To Prepare Payroll and Petty Cash Journals and Bank Reconciliations
304 - To Complete a Practice Set - Representing the Basic Accounting Cycle of a Service Business
305 - To Record Transactions in Special & Multi-Column Journals
306 - To Complete a Practice Set Representing the Basic Accounting Cycle of a Trading Business

CONSTRUCTION

EXCAVATING

FLOORCOVERING

SALES

WIRE COMMUNICATIONS

OTHER CONSTRUCTION TRADES

Subject/Designation - CLERICAL - STENOGRAPHER

Level - Occupational Training

Title - COMMERCIAL (STENOGRAPHIC) [SHORT HAND (TAKE 30)]

By - Humber College, Toronto, Ontario 1974

CCDO No. 4111-118-00

TPOs:

40

101 - Demonstrate Comprehensive Mastery of Theory of Take 30 Shorthand with 80% Accuracy
102 - Transcribe Business Letters from Sight Dictation at 60 WPM with 90% Accuracy
103 - Produce Mailable Business Letters from Sight Dictation at 80 WPM with 90% Accuracy
104 - Produce Mailable Business Letters from Sight Dictation at 100 WPM with 90% Accuracy
105 - Produce Mailable Business Letters from Sight Dictation at 120 WPM with 90% Accuracy

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Subject/Designation - CLERICAL - TYPING

Level - Occupational Training

Title - Clerk Typist

By - Job Core August 1969

CCDO No. 4113-124-00

TPO's

42

01 - Use Correct Business Communication.
02 - Use Dictionary & other Reference Materials.
03 - Use Typing Skills (42 w.p.m. with 2 errors).
04 - Use Dictaphone & Tape Playback Equipment
05 - Use Filing Skills
06 - Use Mail-Handling Skills
07 - Use Other Clerical Skills (receptionist, proofreading, collating, requisitions).
08 - Order Supplies
09 - Operate Various Office Machines
10 - Receive Bill Payments & Make Out Receipts

Subject/Designation - CLERICAL - BOOKKEEPING
Level - Occupational Training
Title - Commercial (Bookkeeping)
By - Northern College, Ontario. 1972
TPOs: CCDO No. 4131

37

01 - Complete All Bookkeeping Through the Bookkeeping Cycle
02 - File Alphabetically and Numerically and Use Various Office Machines and Communicate on General Business Administration
03 - Operate Business Machines and Solve Problems Using Business Mathematics
04 - Communicate Effectively in the Work Environment
05 - Type Mailable Business Forms and Letters

Subject/Designation - CLERICAL - SECRETARIAL
Level - Occupational Training
Title - Commercial (Typing)
By - Northern College, Ontario. 1972
TPOs: CCDO No. 4111

39

01 - Type Mailable Business Forms, Letters, Reports & Minutes
02 - Write Accurately in Shorthand & Transcribe All Business Letters, Messages, Minutes, Reports, etc.
03 - Communicate Effectively in the Work Environment
04 - Perform Various Duties of a Secretary or a Clerk Typist
05 - File Alphabetically and Numerically Office Correspondence. Use Various Office Machines and Communicate on General Business Administration
06 - Use the Combination Journal in any Form and Post any Number of Transactions. Prepare Financial Statements.
07 - Operate the Most Common Business Machines. Solve Problems in Business Math

Subject/Designation - CLERICAL - TYPING
Level - Occupational Training
Title - Typewriting

By - Humber College, Ontario. 1973

TPOs: CCDO No. 4113

41

01 - Develop a Typing Speed of 40 wpm on Electric Typewriter for 3 min.
02 - Type arranged/unarranged Exercises in Centering, Numbers, Multi-column Tabulations, Four Letter Styles and Envelopes
03 - Type Business Forms & Statistical Information
04 - Completion of Employment Forms
05 - Type Communication Media
06 - Type Legal Forms/Dicta Belts/Medical-Dental Belts/MCST/BOSS Envelopes (Any Combination of Two)
07 - Develop A Typing Speed of 60 wpm for 5 Minutes or 50 wpm for 10 Minutes with 1% Error

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Subject/Designation - CLERICAL - STENOGRAPHER
Level - Occupational Training
Title - Stenographer

By - Division of Vocational Education
Province of Newfoundland May, 1974

TPOs: CCDO No. 4111

47

01 - Operate Business Machines
02 - Type from Straight 5 Minute Copy
03 - Produce Typed Material
04 - Take Dictation & Type Mailable Material from Shorthand Notes
05 - Maintain Correspondence & Files
06 - Compose & Type Written Communications
07 - Participate in General Office Functions
08 - Perform Basic Bookkeeping Functions
09 - Communicate Effectively & Develop Personal Competence

Subject/Designation - CLERICAL - BUSINESS MACHINES

Level - Occupational Training

Title - COMMERCIAL (BUSINESS MACHINES)

By - Humber College, Toronto, Ontario 1974

CCDO No. 4141-110-00

TPOs:

43

401 - To Operate Office Calculators
402 - To Complete Calculator Projects
403 - To Operate Posting Machines
404 - To Operate a Key Punch at 8000 Keystrokes Per Hour

Subject/Designation - CLERICAL - OFFICE MACHINE EDP OPERATORS

Level - Occupational Training

Title - Office Machine Operator

By - Job Core August 1969

CCDO No. 4141

TPO's

44

01 - Operate Various Types of Adding Machines.

02 - Operate Calculators.

03 - Operate Billing Machines.

04 - Operate Card-Sorting Machines.

05 - Operate Tabulating Machines.

06 - Operate Mail Preparing & Mail Handling Machinery.

07 - Operate Mail-Opening, Folding, Stuffing, Embossing & Checkwriting Machines.

08 - Operate Postage Meter

Subject/Designation - CLERICAL - OFFICE MACHINE EDP OPERATORS

Level -

Title - Duplicating Machine Operator/Office Clerk

By - JOB CORE

CCDO No. 4141-146 August 1969

TPO's

45

01 - Apply Safety Procedures in Operating & Maintaining Duplicating Equipment
02 - Perform & Understand Various Duplicating/Copying Processes
03 - Keep Records of Work Produced, Collate Duplicated Pages & Order Supplies for Machines
04 - Follow Directions, Understand & Perform General Clerical Duties
05 - Operate Office Duplicating Equipment

Subject/Designation - OFFICE MACHINE EDP EQUIPMENT OPERATORS -
- KEYPUNCH OPERATOR

Level - Occupational Training

Title - Key Punch Operator

By - JOB CORE August 1969

CCDO No. 4143-134

TPO's

46

01 - Utilize Understanding of Punched Card Terminology & Abbreviations
02 - Identify Card Punch Operative Parts & Features
03 - Identify, State Function, & Operate Control Switches
04 - Identify, State Function, & Operate Control & Special Punching Keys
05 - Identify & Operate Alphabetic & Numeric Keyboards
06 - Prepare Key Punch for Operation
07 - Perform Key Punch Operations

. over --

Subject/Designation - CLERICAL - STOCK CLERK
Level - Occupational Training
Title - Stock Clerk

By - Job Core August 1969

CCDO No. 4155-126

TPO's

48

01 - Maintain neat & accurate records & files.
02 - Receive, count, sort & weigh incoming stock.
03 - Receive items (verify), & examine for conformation to specifications.
04 - Determine identifying info. (size, etc.), & mark identify codes, etc. on articles
05 - Determine methods of storage, stock location & store stock.
06 - Adjust & repair articles in stock as necessary
07 - Fill orders from stock on hand & cut stock to size if necessary.
08 - Requisition articles as necessary to fill incoming orders.
09 - Prepare stock inventory & distribute stock as necessary.
10 - Maintain record-keeping on stock.

49

Subject/Designation - CONSTRUCTION - EXCAVATING
Level - Occupational Training
Title - Heavy Duty Equipment Operation

By - Adult Vocational Education,
Province of Nova Scotia. April, 1973

TPOs: CCDO No. 8711

01 - Perform Related Operator Duties
02 - Communicate Effectively
03 - Care For Machines & Use Related Hand Tools
04 - Operate Dozers, Scrapers, Loaders, Graders & Compactors
05 - Operate Asphalt Equipment
06 - Operate Back Hoes & Shovels
07 - Operate Crushing & Drilling Equipment
08 - Operate On & Off Highway Trucks
09 - Operate Hoisting Equipment
10 - Operate Concrete Mixing & Handling Equipment

50

Subject/Designation - CONSTRUCTION - EXCAVATING
Level - Occupational Training
Title - Heavy Duty Equipment Operator

By - Sheridan College, Ontario. May, 1974

TPOs: CCDO No. 8711

01 - Communicate Effectively
02 - Perform Related Operator Duties
03 - Operate Wheel Trencher
04 - Operate Bulldozer and Loader of Crawler and Rubber Tire Type
05 - Operate Motor Scraper
06 - Operate Grader
07 - Operate Combination Loader-Backhoe and Grade-all Type Machines
08 - Operate Side Boom and Side Boom Dozer

NOTE - Developed by DACUM Committee

51

Subject/Designation - CONSTRUCTION (FLOORCOVERING)
Level - Occupational Training/Post-Secondary
Title - Resilient Flooring Specialist
By - Humber College, Ontario December, 1973

TPOs: CCDO No. 8782

01 - Communicate Effectively
02 - Estimate Quantities and Purchases
03 - Sell Resilient Flooring Materials
04 - Analyze Job & Recommend Installation Techniques
05 - Recommend Repair & Maintenance Procedures
06 - Advise Architectural Specifiers
07 - Co-ordinate and Expedite Job Installation

Note:- This and 3 other related charts have been combined for one post-secondary program -
Installation Specialist Technician (Carpeting)
Retail Sales Specialist (Carpeting)
Sales Specialist (Carpeting)

Produced by DACUM Committee.

52

Subject/Designation - CONSTRUCTION (FLOORCOVERING)
Level - Occupational Training/Post Secondary
Title - Installation Specialist Technician (Carpeting)
By - Humber College, Ontario. November, 1973

TPOs: CCDO No. 8799

01 - Communicate Effectively
02 - Make Calculations re Estimates, Lay Outs, Costing
03 - Use all Tools Related to Installation
04 - Identify Carpet Constructions
05 - Perform Work Room Activities
06 - Make Installations & Repairs, Domestic & Commercial
07 - Identify & Select Appropriate Accessories
08 - Make Recommendations re Methods - Installation and Accessories

Note:- This and 3 other related charts have been combined for one post-secondary program - Resilient Flooring Specialist, Retail Sales Specialist (Carpeting), Sales Specialist (Carpeting).

Produced by DACUM Committee

53

Subject/Designation - CONSTRUCTION (FLOORCOVERING)

Level - Occupational Training

Title - Carpet Installation

By - Adult Vocational Education, Province of Nova Scotia. March, 1973

TPOs: CCDO No. 8799

01 - Fringe and Bind
02 - Layout Carpet Installation
03 - Seam Carpets
04 - Use & Repair Tools
05 - Stretch Carpet
06 - Instal Carpet
07 - Identify with Customer & Employer
08 - Read Blueprints, Estimate & Measure
09 - Evaluate & Prepare Job Site
10 - Identify Materials
11 - Repair & Spot Clean Carpets

54

Subject/Designation - CONSTRUCTION/SALES (Card 1 of 2)

Level - Occupational Training (40 weeks)

Title - Building Materials Sales - Related Trades and Business Aspects (Chart 4)

By - Humber College, Ontario. 1973

TPOs: CCDO No. 8799 -(5135-154-00)

01 - Interpret Terms, Symbols, Dimensions and Drawings in Blueprint
02 - (Masonry) Locate, Level, Prepare and Pour Concrete Footings for Dwellings
03 - (Masonry) Select Blocks, Mix Mortar and Lay Required Courses for Foundation
04 - (Plastering) Tape and Plaster all Joints Between Gyproc Panels
05 -(Tiling) Install Ceiling Tiles
06 - Laying of Floor and Wall Tiles
07 - (Electrical) Design a Basic Service and Install Additional Fixtures

(Cont'd on 2)

Subject/Designation - CONSTRUCTION/SALES (Card 2 of 2)

Level - Occupational Training (40 weeks)

Title - Building Materials Sales - Related Trades and Business Aspects (Part 4)

TPOs - Continued

08 - (Plumbing) Design a Basic Service & Replace Fixtures
09 - Carpet Installation
10 - Install Eves & Reflect Forced Air In Basement
11 - Prepare Mix, Pour and Finish Front Walk and Entrance Steps
12 - (Accounting) Student Will Be Able to Keep Simple Records
13 - (Sales) Develop Finesse in Public Relations, Merchandise Display and Sales Procedure

Note:- This Program prepares students for home maintenance and selling of home building materials and tools

Instructor developed.

Subject/Designation - CONSTRUCTION/SALES
Level - Occupational Training (40 weeks)
Title - Building Materials Sales - Painting (Chart 3)
By - Humber College, Ontario. 1973

TPOs: CCDO No. 8799 (5135-154-00)

01 - Selecting and Applying the Right Paint for the Job
02 - Selecting the Proper Tools, Abbrasives & Solvents
03 - Surfaces Preparation for Painting
04 - Estimating and Purchasing Paint
05 - Paint Application, Undercoat and Selection of Finishing Coat
06 - Wood Treatment & Preservatives, Varnishes, Stains, etc.
07 - Ladders, Trestles, Scaffolds

55

Note: - This Program prepares students for home maintenance and selling of home building materials and tools.

Instructor developed.

Subject/Designation - CONSTRUCTION/SALES
Level - Occupational Training (40 weeks)
Title - Building Materials Sales - Maintenance (Chart 2)

By - Humber College, Ontario - 1973

TPOs: CCDO No. 8799 (5135-154-00)

56

01 - Maintain Basement
02 - Maintain Windows and Doors
03 - Maintain Wall, Ceiling and Floors
04 - Maintain Plumbing
05 - Maintain Electricity
06 - Maintain Roof
07 - Maintain Concrete Pointing & Chimney Repairs
08 - Maintain Balcony and Fences
09 - Maintain Cabinetry

Note:- This Program prepares students for home maintenance and selling of home building materials and tools.

Instructor developed.

Subject/Designation _ CONSTRUCTION/SALES (Card 1 of 2)

Level - Occupational Training (40 weeks)

Title - Building Materials Sales - Carpentry, New and Repairs (Chart 1)

By - Humber College, Ontario - 1973

TPOs: CCDO No. 8799 (5135-154-00)

57

01 - Lay Flooring Structure, i.e. Flooring Beams and Sub-Floor
02 - Erect All Stud Walls, Plumb Tie and Fix
03 - Construct Roof
04 - Install & Fix Windows & Doors
05 - Select & Install Insulation
06 - Complete Wall and Ceiling Covering
07 - Cover in Exterior Walls
08 - Install Kitchen and Bathroom Cabinets and Cut Out for Sinks
09 - Complete Interior Trim

(Cont'd on 2)

Subject/Designation - CONSTRUCTION
Level - Occupational Training
Title - Cement Mason
By - JOB CORE August 1969
CCDO No. 8783-122

TPO's
01 - Use Safety Procedures on Job
02 - Use Care in Handling Tools
03 - Use & Maintain Common Tools
04 - Use & Maintain Special Tools
05 - Use & Maintain Measuring Equipment
06 - Use Layout & Design
07 - Estimate Job Needs
08 - Perform Concrete Masonery Operations

59

Subject/Designation - CONSTRUCTION - CARPENTER
Level -
Title - Carpenter, Construction
By - JOB CORE August 1969
CCDO No. 8781-110

TPO's
01 - Use Safety Procedures In Shop & On Job
02 - Use, Maintain & Operate Tools & Machinery
03 - Use Appropriate Carpentry Terminology
04 - Interpret Blueprints
05 - Lay Out Building & Excavating Lines
06 - Erect Batton Boards
07 - Estimate Costs
08 - Construct Foundation Forms
09 - Construct Scaffolding Forms
10 - Construct Frames & Trusses
11 - Install Sheating
12 - Perform Finish Work

60

Subject/Designation - CONSTRUCTION/SALES (Card 2 of 2)

Level - Occupational Training (40 weeks)

Title - Building Materials Sales - Carpentry, New and Repairs (Chart 1)

TPOs - Continued

10 - Complete Exterior Trim
11 - Build Front Balcony
12 - Erect Fence

Note:- This Program prepares students for home maintenance and selling of home building materials and tools.

Instructor developed.

Subject Designation - CONSTRUCTION (Card 1 of 2)
Level - Post-Secondary (Technology)
Title - Construction Technology

By - Holland College,
Prince Edward Island - 1970

TPOs: CCDO No._____

61

01 - Communicate Effectively
02 - Identify, Select & Control Application of Construction Materials
03 - Interpret Basic Designs & Apply Sound Construction Principles
04 - Select & Maintain Construction Site Tools and Equipment
05 - Produce, Read & Interpret Drawings & Specifications
06 - Survey & Investigate Construction Site Surface and Sub-Surface
07 - Interpret & Apply Laws, Codes, Regulations and Contract Documents
08 - Perform Tests & Inspections

(Cont'd on 2)

Subject-Designation - CONSTRUCTION (Card 2 of 2)

Level - Post-Secondary (Technology)
Title - Construction Technology

TPOs - Continued

09 - Plan, Co-ordinate, Schedule & Control Projects
10 - Take Off Quantities & Estimate Costs
11 - Select, Train & Supervise Personnel
12 - Maintain Efficient Office & Administrative Procedures

Subject/Designation - CONSTRUCTION
Level - Occupational Training
Title - Drywall and Ceiling Erection and Finishing

By - Adult Vocational Education, Province of Nova Scotia. June, 1973

TPOs: CCDO No. 8784

62

01 - Layout According to Floor Plans
02 - Use Tools & Equipment
03 - Erect Steel Framing
04 - Apply Drywall
05 - Install Insulation
06 - Tape & Finish
07 - Install Suspended Ceilings
08 - Communicate & Help Co-ordinate With Others on Job
09 - Plan Jobs
10 - Install Specialty Units & Materials

Subject/Designation - CONSTRUCTION

Level - Occupational Training
Title - Oil Burner Repair & Servicing

By - Nova Scotia New Start Corp. 1970

TPOs: CCDO No. 8799

63

01 - Communicate Effectively
02 - Use & Care For Tools & Equipment
03 - Clean & Service Heating Units
04 - Service & Overhaul Nozzle Assembly
05 - Service & Adjust Fuel Systems
06 - Adjust & Repair Mechanical Systems
07 - Service & Repair Electrical Systems & Controls
08 - Use Measuring & Testing Devices

Subject-Designation - CONSTRUCTION - WIRE COMMUNICATIONS

Level - Occupational Training

Title - Cable-Television Serviceman

By - Humber College, Ontario. January, 1974.

TPOs: CCDO No. 8735-170-00

58

01 - Drive Defensively (Such as Smith System)
02 - Use Hand Tools and Maintain
03 - Repair and Maintain Subscriber Equipment
04 - Operate Test Equipment
05 - Troubleshoot & Isolate System, T.V. Set and Cable Faults
06 - Communicate and Organize Effectively

NOTE: - Developed by DACUM Committee

Subject/Designation - CONSTRUCTION
Level - Occupational Training
Title - Gas Appliance Repair
By - JOB CORE August 1969
CCDO No. 8791

TPO's

01 - Use Safety Procedures
02 - Use & Maintain Common Hand Tools
03 - Use & Maintain Special Equipment
64 04 - Requisition Parts
05 - Estimate Cost of Repair
06 - Repair Connections & Fittings
07 - Maintain Electrical Components
08 - Repair & Maintain Heating/Cooling Unit

Subject/Designation - CONSTRUCTION - BRICK AND STONE MASON /.
Level - Occupational Training
Title - Brick and Stone Mason
By - Job Core August 1969
CCDO No. 8782

TPO's

01 - Use Safety Procedures re: Scaffolds, Tools, & Transporting of Brick & Mortar
02 - Care & Use Common Hand Tools, Special Tools & Measuring Equip.
03 - Follow Plans, Directions & Boundaries for Layout & Design
65 04 - Estimate Bricks, Blocks(etc.), Mortar, Scaffolding & Man-Hours Required
05 - Estimate Total Cost of Building Masonry Structure
06 - Mix Mortar, Sand, Cement & Water Each Properly & Select Aggregate of Sand
07 - Construct Scaffold.
08 - Use Trowel Properly
09 - Utilize Knowledge of Various Bricklaying Procedures
10 - Utilize Knowledge of Corner & Lead Laying & Jointing

Subject/Designation - CONSTRUCTION
Level -
Title - Furnace Repairman
By - JOB CORE

August 1969
CCDO No. 8799-122

TPO's
01 - Use Safety Procedures
02 - Use & Maintain Common & Special Tools & Test & Measuring Equip.
03 - Read/Follow Charts & Diagrams
04 - Read/Interpret Meter Readings
66
05 - Apply Principles of Heating
06 - Use Knowledge of Practical Electricity
07 - Perform Pipefitting Operations
08 - Repair Oil Furnace
09 - Repair Gas Furnace
10 - Repair/Replace/Adjust Control Devices
11 - Repair Air Heating Systems
12 - Repair Ductwork

Subject/Designation - CONSTRUCTION
Level -
Title - Custodial Maintenance
By - JOB CORE

August 1969
CCDO No. 8799-194

TPO's
01 - Use Safety Procedures
02 - Use Common Hand Tools, Special Tools, & Equipment
67
03 - Plan Work Schedule
04 - Take Inventory of Supplies & Order More if Necessary
05 - Deal With Requests from Tenants
06 - Perform Various Cleaning Operations
07 - Repair Piping Systems & Fixtures
08 - Repair Electrical Circuits & Fixtures
09 - Maintain Grounds
10 - Perform Painting Operations
11 - Maintain Concrete & Masonery
12 - Perform Building Repairs
13 - Perform Miscellaneous Maintenance Duties

Subject/Designation - OTHER CONSTRUCTION TRADES
Level - Occupational Training
Title - Painter and Paper Hanger
By - JOB CORE August 1969
CCDO No. 8785

68

TPO's
01 - Use Safety Procedures on Job
02 - Use & Care for Common Hand Tools & Special Tools
03 - Estimate Cost of Job
04 - Construct Scaffolding
05 - Utilize Knowledge of Painting & Paper Hanging Materials
06 - Utilize Knowledge of Solvents, Removers, & Other Job Related Materials
07 - Prepare Surfaces for Paint
08 - Perform Interior and/or Exterior Painting
09 - Perform Cleanup Operations
10 - Prepare Surface for Paperhanging
11 - Perform Paperhanging Operations
12 - Perform Cleanup Operations
13 - Perform Miscellaneous Decorative Operations

CREATIVE ARTS

ANTIQUER

FINE AND COMMERCIAL ARTS

PERFORMING ARTS

COMMERCIAL ART

69

Subject/Designation - ANTIQUER
Level - Occupational Training
Title - Antique Restoration
By - Nova Scotia Newstart Inc. 1970.
TPOs: CCDO No. 8595-110-11

01 - USE HAND TOOLS
02 - USE MECHANICAL & POWER TOOLS
03 - PREPARE & FINISH WOOD & METALS
04 - TURN & SPIN
05 - CARVE, FORM & SCULPTURE
06 - CONSTRUCT WOOD JOINTS
07 - FASTEN & JOIN WOOD
08 - MANAGEMENT OF OPERATION
09 - PERFORM GENERAL SHOP DUTIES

70

Subject/Designation - FINE AND COMMERCIAL ARTS
Level - Occupational Training
Title - Wood Handcraft
By - Nova Scotia Dept. of Education 1970
TPOs: CCDO No. 3319

01 - Use Hand Tools
02 - Use Mechanical & Power Tools
03 - Prepare & Finish Wood
04 - Turn & Spin
05 - Carve, Form & Sculpture
06 - Construct Wood Joints
07 - Fasten & Join Wood
08 - Upholster Furniture
09 - Design Handcraft Articles
10 - Manage Craft Operation

71

Subject/Designation - FINE AND COMMERCIAL ARTS
Level - Occupational Training
Title - Leather Handcraft
By - Nova Scotia Dept. of Education 1970
TPOs: CCDO No. 3319

01 - Select & Use Tools and Materials
02 - Layout & Cut Leather
03 - Assemble Punch & Lace Leather
04 - Decorate & Finish Leather
05 - Instal Findings
06 - Design Handcraft Articles
07 - Manage Craft Operation

72

Subject/Designation - FINE AND COMMERCIAL ARTS
Level - Occupational Training
Title - Jewelry Handcraft
By - Nova Scotia Dept. of Education 1970
TPOs: CCDO No. 3319

01 - Select & Use Tools & Equipment
02 - Produce Flat Work
03 - Produce Wire Work
04 - Anneal & Join Silver
05 - Texture, Etch Colour & Polish Silver
06 - Enamel Jewelry
07 - Set & Cut Stones
08 - Produce Wrought Iron Work
09 - Design Handcraft Articles
10 - Manage Craft Operation

73

Subject/Designation - FINE & COMMERCIAL ARTS

Level - Occupational Training
Title - Pottery Handcraft

By - Nova Scotia Dept. of Education 1970

TPOs: CCDO No. 3319

01 - Prepare Materials
02 - Hand Build Pottery
03 - Make Wheel Thrown Pots
04 - Decorate Pottery
05 - Fire Pottery
06 - Glaze Pottery
07 - Make Glazes
08 - Maintain, Store & Use Tools & Equipment
09 - Make Molds
10 - Cast Pottery
11 - Design Pottery Articles
12 - Manage Craft Operation

74

Subject/Designation - FINE AND COMMERCIAL ARTS

Level - Occupational Training

Title - Machine Knitting Handcraft

By - Nova Scotia Dept. of Education 1970

TPOs: CCDO No. 3319

01 - Machine Knit

02 - Finish Garment

Subject/Designation - FINE & COMMERCIAL ARTS

Level - Occupational Training
Title - Sewing and Weaving Handcraft

By - Nova Scotia Dept. of Education 1970

TPOs: CCDO No. 3319

75

01 - Layout & Cut for Sewing
02 - Sew
03 - Construct Garments
04 - Construct Sewn Articles
05 - Design Handcraft Articles
06 - Manage Craft Operation
07 - Interpret Weave Patterns, Drafts
08 - Make Warps
09 - Dress Looms
10 - Weave on Looms

Subject/Designation - PERFORMING ARTS

Level - Occupational Training/Post-Secondary
Title - Radio Announcing

By - Adult Vocational Education
Province of Nova Scotia February, 1973

TPOs: CCDO No. 3337

77

01 - Communicate on Air
02 - Communicate with Others
03 - Read Well, Pronounce & Enunciate
04 - Project Appropriate On-Air Personality
05 - Operate Independently
06 - Handle Routines
07 - Operate Equipment
08 - Create Programming
09 - Handle News Work
10 - Produce Commercials
11 - Deal Effectively with Public
12 - Keep Well Informed

Subject/Designation - COMMERCIAL ART
Level - Post-Secondary
Title - Commercial Design

By - Holland College,
Prince Edward Island. 1970

TPOs: CCDO No. 3313

78

01 - Manage Art Operation
02 - Letter & Use Typography
03 - Produce Graphics
04 - Draw, Shade and Render
05 - Colour and Paint
06 - Use Photography
07 - Apply Texture and Materials
08 - Create Functional Designs
09 - Compose
10 - Design for a Co-ordinate Production
11 - Analyze and Define Design Problems

Subject/Designation - FINE AND COMMERCIAL ARTS
Level - Occupational Training
Title - Florist Assistant
By - JOB CORE August 1969
CCDO No. 3319

TPO's

76

01 - Use Safety Precautions When Handling Plants with Thorns, & When Handling Insecticides
02 - Identify Types of Flowers
03 - Take Orders & Arrange for Delivery
04 - Suggest Flower Arrangements to Customer
05 - Take Inventory & Plan for Demands
06 - Grow & Nuture Plants
07 - Cut, Preserve & Treat Plants
08 - Arrange Plants from previous Plans and/or Directions
09 - Store Under Correct Conditions
10 - Create Original Arrangements

Subject/Designation - CREATIVE ARTS - COMMERCIAL ART
Level - Occupational Training
Title - Commercial and/or Graphic Artist
By - JOB CORE August 1969 CCDO No. 3313

79

TPO's
01 - Use Safety Procedures
02 - Use & Care for Materials & Equipment
03 - Perform Linear Design & Patterns
04 - Use Color, Shading, Texture, Perspective & Anatomy Principles Properly
05 - Use Knowledge of Media to Create Designs Using a Variety of Methods
06 - Use Freehand Lettering & Layout Lettering & Mechanical Lettering Equipment
07 - Make Drawings of Various Subject Matter
08 - Use Illustration Techniques
09 - Use Various Layout Methods
10 - Make Technical Illustrations

Commercial and/or Graphic Artist

TPO's (cont.)
11 - Prepare Visual Communication
12 - Use Various Reproduction Methods & Processes
13 - Organize Work Properly
14 - Requisition Supplies & Equipment When Necessary

EDUCATION AND TRAINING

Subject/Designation - EDUCATION & TRAINING

Level - Occupational Training (In-Service)

Title - Learning Assistance & Monitoring in a Personalized Adult Basic Education Environment

By - Nova Scotia New Start Corp. 1970

TPOs: CCDO No. _____

80

01 - Assist in Design of Programs for Individual Trainee
02 - Personally Evaluate Trainee Progress
03 - Maintain Effective Learning Environment
04 - Assist Trainee in Self Learning
05 - Develop Learning Materials
06 - Interact Effectively within the Training Centre
07 - Communicate Effectively with Trainee
08 - Interact Effectively with the Community
09 - Develop Personal Competence

Subject/Designation - EDUCATION & TRAINING

Level - Post-Secondary

Title - Professional Counselling (School)

By - Adult Vocational Education, Province of Nova Scotia. September, 1971.

TPOs: CCDO No. _____

81

01 - Communicate
02 - Identify & Specify Problems & Student Needs
03 - Apply Counselling Methods
04 - Apply Special Group Counselling Methods
05 - Measure & Evaluate
06 - Serve as Consultant
07 - Apply Behaviour Change Techniques
08 - Administer Program of Services
09 - Organize & Conduct Vocational & Educational Information Programs
10 - Enlist & Utilize Community Referral Resources
11 - Employ Effective Instruction Techniques
12 - Develop & Implement Programs in Psychological Education
13 - Continue to Acquire Professional Competence

Subject-Designation - EDUCATION & TRAINING

Level - Post-Secondary, Technician (2 year)

Title - Instructional Materials Centre Technician

By - Humber College, Ontario. 1972.

TPOs: CCDO No. _____

82

01 - Plan & Produce Still Photographic Material
02 - Identify & set Up & Operate Non-Tape Components
03 - Operate Equipment, Plan & Produce Tape Recorded Materials
04 - Present Slide & Filmstrip Projected Materials
05 - Plan, Produce & Present Overhead Projectuals
06 - Plan, Produce & Present a Single Camera T.V. Production
07 - Set Up & Operate Motion Picture Projection Equipment
08 - Plan and Produce Sign Materials
09 - Plan and Produce Duplicating Materials
10 - Plan, Produce and Present a Short Motion Picture Film
11 - Plan, Produce & Operate a Programmed Slide Presentation

Subject/Designation - EDUCATION & TRAINING

Level - Post-Secondary

Title - Learner Evaluation and Activity Development (Draft Copy)

By - Holland College,
Prince Edward Island. December, 1971

TPOs: CCDO No. _____

83

01 - Assist in Design of Individual Learner Programs
02 - Evaluate Learner Progress
03 - Create & Maintain Learning Environment
04 - Assist Learners in Occupational Skill Development
05 - Assist in Self-Learning
06 - Develop Learning Materials
07 - Communicate with Learners
08 - Communicate with Staff in Training Environment
09 - Interact with the Community
10 - Develop Personal Competencies
11 - Perform Administrative or Related Functions

(TEACHER TRAINING PROGRAM)

Subject/Designation - EDUCATION & TRAINING
Level - Occupational Training (In-Service)
Title - Audio-Visual Communications Support for Learning Environment
By - Nova Scotia New Start 1970
TPOs: CCDO NO. _____

84

01 - PREPARE AUDIO RECORDINGS
02 - PREPARE VIDEO RECORDINGS
03 - PREPARE GRAPHICS
04 - PREPARE PERMANENT VISUAL MATERIALS
05 - PRODUCE A.V. PRODUCTIONS
06 - PRESENT A.V. PRODUCTIONS
07 - SET UP & MAINTAIN A.V. EQUIPMENT & SOFTWARE
08 - MANAGE A.V. FACILITY
09 - COMMUNICATE EFFECTIVELY

Subject/Designation - EDUCATION & TRAINING
Level - Post-Secondary (1 month In-Service)
Title - Instructors of Individualized Programs
By - Humber College, Ontario. March, 1974
TPOs: CCDO No. 2791-000-01

85

01 - DEVELOP & REVISE INSTRUCTIONAL SYSTEMS
02 - COMMUNICATE EFFECTIVELY
03 - MANAGE THE LEARNING SITUATION
04 - MANAGE THE SUPPORT SYSTEM
05 - DEVELOP INDEPENDENT LEARNERS
06 - AFFECT POSITIVELY THE LEARNER'S SELF CONCEPT

TEACHER TRAINING PROGRAM - IN-SERVICE
TPO 01 DEVELOPED AS INDIVIDUALIZED INSTRUCTION - 10 MODULES

ENGINEERING TECHNOLOGY

SURVEYOR

DRAFTSMAN

Subject/Designation - ENGINEERING TECHNOLOGY
Level - Post-Secondary
Title - Electrical Technology

By - Applied Arts and Technology Education Division, Nova Scotia Dept. of Education

TPOs: CCDO No. 2165 Oct. 1971

86

01 - Identify & Select Components
02 - Calculate Electrical Mathematical Problems
03 - Analyze Electrical Circuitry
04 - Design Electrical Circuitry & Equipment and Facilities
05 - Use Hand Tools & Associated Equipment
06 - Use Test & Measuring Equipment
07 - Repair & Maintain Rotary Equipment
08 - Maintain & Instal Control Equipment
09 - Maintain & Repair High Voltage Switchgear and Transformers
10 - Instal Equipment
11 - Supervise Work
12 - Communicate Effectively

Subject/Designation - ENGINEERING TECHNOLOGY
Level - Post-Secondary
Title - Electronics Technology

By - Holland College, Prince Edward Island May, 1970

TPOs: CCDO No. 2165

87

01 - Identify, Select & Handle Electronic Components
02 - Apply Tools & Testing Equipment
03 - Analyze Electronic Circuits & Systems
04 - Test, Maintain & Calibrate Electronic Equipment
05 - Trouble Shoot, Isolate & Repair Defective Units
06 - Instal, Interface & Design Systems
07 - Construct Model & Prototype Electronic Equipment
08 - Design & Develop Electronic Circuits & Equipment
09 - Perform Electronics Math Calculations
10 - Plan & Control Work Methods
11 - Interpret & Communicate Technical Information

Subject/Designation - ENGINEERING TECHNOLOGY

Level - Post-Secondary
Title - Industrial Instrumentation Technician

By - Humber College, Ontario. June, 1973

TPOs: CCDO No. 2165

88

01 - Design a Simple Instrument System
02 - Maintain Instruments by Calibration and/or Repair
03 - Trouble Shoot Instruments & Control Systems
04 - Install Instrument Systems
05 - Calculate Mathematical Computation Related to Process
06 - Use Hand Tool & Mechanical Measuring Instruments
07 - Use Test Equipment
08 - Communicate Effectively at all Levels
09 - Supervise Work

Note - Produced by a DACUM Committee

Subject/Designation - ENGINEERING TECHNOLOGY
Level - Post-Secondary
Title - Plastics Production Technology

By - Holland College,
Prince Edward Island July, 1972.

TPOs: CCDO No. 2165

89

01 - Identify, Select & Handle Materials
02 - Operate, Adjust and Maintain Equipment
03 - Form & Fabricate Plastic Materials
04 - Apply Machine Production Methods
05 - Test & Inspect Materials & Parts
06 - Design & Produce Tooling
07 - Plan & Control Methods of Operation
08 - Establish Cost & Market Procedures
09 - Determine Time & Labour Requirements
10 - Interpret & Apply Safety & Governmental Regulations
11 - Interpret & Communicate Technical Information

Subject/Designation - ENGINEERING TECHNOLOGY

Level - Post-Secondary

Title - Precision Instrument Technician

By - Humber College, Ontario. August, 1973.

TPOs: CCDO No. 2165 (8588-118-00)

90

01 - Operate & Maintain Machine Tools
02 - Select, Use & Maintain Hand Tools
03 - Use Measuring Equipment - Mechanical, Optical, Electrical
04 - Design Assembly and Testing Devices
05 - Assemble Instrument - Mechanical, Optical, Electrical
06 - Repair, Adjust and Maintain Instrument
07 - Read and Interpret Blueprints and Schematics
08 - Identify and Select Materials & Components
09 - Communicate Effectively

Note: - Produced by DACUM Committee under development

Subject/Designation - SURVEYOR -- PROPERTY MAPPING
Level -

Title - Property Mapping

By - Applied Arts and Technology Education Division, Nova Scotia Dept. of Education

CCDO No. 2161 August 1974

91

TPO's

01 - Perform General Drafting Techniques
02 - Interpret & Use Air Photos
03 - Interpret Maps
04 - Locate & Interpret Documents
05 - Perform Field Work
06 - Interpret Survey Work
07 - Communicate Effectively in Work Environment
08 - Prepare Maps
09 - Operate Office Equipment
10 - Organize & Administer Work
11 - Index & File

Subject/Designation - ENGINEERING TECHNOLOGY - DRAFTSMAN
Level - Occupational Training

Title - Draftsman

By - JOB CORE August 1969

CCDO No. 2163-110

92

TPO's

01 - Use Safety Procedures
02 - Use & Maintain Tools & Instruments
03 - Use Line Symbols & Conventional Representation
04 - Perform Tracing Operations
05 - Apply Principles of Geometric Projections
06 - Apply Principles of Isometric Drawings
07 - Use Machine Drawings
08 - Use Structural Drawings
09 - Use Architectural Drawings
10 - Use Civil Engineering Drawings
11 - Use Electronic Drawings
12 - Use Sheet Metal Drawings
13 - Operate Print Machinery

FORESTRY AND LOGGING

93

Subject/Designation - FORESTRY & LOGGING
Level - Occupational Training (Card 1 of 2)
Title - Forestry Filers
By - Northern College, Ontario. 1972
TPOs: CCDC No. 7513

01 - Work Environment
02 - Practice Safety & Maintain Tools & Equipment
03 - Use Tools & Equipment
04 - Perform Mathematical Operations
05 - Sharpen Band & Circular Saws
06 - Tension Band & Circular Saws
07 - Shape & Swage Band Saws
08 - Repair Band & Circular Saws
09 - Repair Carbide Saws

Subject/Designation - FORESTRY & LOGGING
Level - Occupational Training
Title - Forestry Filers (Card 2 of 2)

TPOs: - Continued

10 - Sharpen Knives
11 - Align Band Mills, Tracks, Resaws, Edgers, Gang Saws, Trimmers
12 - Maintain Hydraulic Systems
13 - Operate Machine Shop Equipment

94

Subject/Designation - FORESTRY & LOGGING
Level - Occupational Training
Title - Softwood Lumber Grading

By - Northern College, Ontario. 1973

TPOs: CCDO No. 7516

01 - Communicate in a Work Environment
02 - Maintain the Dressed Size of Lumber
03 - Maintain the Manufacturing Standard
04 - Measure and Evaluate the Degrading Characteristics
05 - Grade Light Framing Structural Joists & Planks, Boards Structural Light Framing and Studs
06 - Locate & Follow the Rules & Regulations on Decking, Beams & Stringers & Posts & Timbers
07 - Grade Stamp Dressed Lumber
08 - Separate & Identify the Commercial Softwood Lumber Species of Northern Ontario
09 - Maintain Equipment and Materials

95

Subject/Designation - FORESTRY & LOGGING
Level - Occupational Training
Title - Forest Products Scaling

By - Northern College, Ontario. 1973

TPOs: CCDO No. 7516

01 - Scale and Determine Volume of Cubed Wood
02 - Scale & Determine Volume of Stacked Wood
03 - Scale & Determine Volume of Saw Logs
04 - Butt Scale Tree Length
05 - Weight Scale Bulk Volumes of Wood
06 - Separate and Identify all Commercial Hardwood Species
07 - Separate and Identify all Commercial Softwood Species
08 - Use Tools and Equipment

FISHING

Subject/Designation - FISHING
Level - Occupational Training
Title - Deckhand Training

By - Nova Scotia New Start Corp. 1970

TPOs: CCDO No. 7313-122-00

96

01 - Perform Emergency Duties
02 - Perform General Ship Duties
03 - Maintain Efficient Work Environment
04 - Steer A Vessel
05 - Rig Fishing Gear
06 - Maintain Fishing Gear
07 - Operate Trawl Fishing Gear
08 - Fish By Long Line
09 - Operate Purse Seine Fishing Gear
10 - Handle & Process Fish
11 - Lead a Constructive Working Life

MANAGEMENT AND ADMINISTRATION

97

Subject/Designation - GOVERNMENT ADMINISTRATION

Level - Adults (Card 1 of 2)

Title - Local Government and Band Management for Community Development

By - Curriculum Development Branch,
Department of Education,
Province of British Columbia. February, 1974

TPOs: CCDO No. 1119

01 - Participate Effectively in Community
02 - Apply Procedures for Land Claims Settlement
03 - Supervise Land Administration & Management of Band Assets
04 - Apply Legislative Functions
05 - Apply Management &Supervisory Techniques
06 - Communicate Effectively
07 - Plan, Organize and Supervise Economic Development
08 - Plan and Regulate the Administering of Financial Management
09 - Plan and Supervise the Administering of Community Development Programs

(Cont'd on 2)

Subject/Designation - GOVERNMENT ADMINISTRATION

Level - Adults (Card 2 of 2)

Title - Local Government and Band Management for Community Development

TPOs - Continued

10 - Perform Public Relations Functions
11 - Provide & Administer Information Services
12 - Perform Financial Management Functions
13 - Apply Land Administration Procedures
14 - Perform Office Administration Procedures
15 - Administer Economic Development Programs
16 - Administer Social, Community Development and Service Programs
17 - Administer Educational & Training Programs

NOTE: These functions refer to an Indian Band and their Council

Subject/Designation - MANAGEMENT AND ADMINISTRATION
Level - Post-Secondary
Title - Business Management

By - Holland College,
Prince Edward Island. 1970

TPOs: CCDO No. 1179

98

01 - Communicate Effectively & Develop Personal Competence
02 - Manage & Develop Personnel
03 - Organize for Effective Work Environment
04 - Participate in General Office Procedures
05 - Operate Accounting System
06 - Manage Financial Resources
07 - Manage Physical Resources
08 - Gather Data & Develop Reports
09 - Operate Sales & Promotion
10 - Participate in Marketing Operations
11 - Manage Purchasing Operations

ILM

Subject/Designation - MANAGEMENT & ADMINISTRATION
Level - Post-Secondary
Title - Executive & Administrative Assistant

By - Holland College,
Prince Edward Island 1970

TPOs: CCDO No. 1179

99

01 - Communicate Effectively & Develop Personal Competence
02 - Assist in Managing Executive's Work
03 - Supervise and Develop Staff
04 - Organize & Maintain Office Environment
05 - Organize & Maintain Correspondence & Files
06 - Perform Basic Bookkeeping Functions
07 - Operate Business Machines
08 - Type and Transcribe
09 - Organize and Prepare Written Communication
10 - Co-ordinate Research and Development of Executive Presentations

MATERIAL HANDLING

Subject/Designation - MATERIAL - HANDLING
Level - Occupational Training
Title - General Warehousing Stockroom Work

By - Adult Vocational Education
Province of Nova Scotia June, 1973

TPOs: CCDO No. 9319

100

01 - Communicate Effectively
02 - Receive Merchandise
03 - Maintain Stock Control of Inventory
04 - Perform Merchandise Pricing Function
05 - Store Merchandise
06 - Receive & Process Returned Merchandise
07 - Process Orders & Ship Merchandise
08 - Supervise Warehouse Activities
09 - Operate & Maintain Warehouse Equipment
10 - Follow Safety, Security & Fire Regulations

Subject/Designation - MATERIAL HANDLING
Level - Occupational Training
Title - Warehouseman and Materials Handler

By - JOB CORE August 1969
CCDO No. 4155

TPO's

101

01 - Use Safety Procedures
02 - Inspect Forklifts, etc. for Wear
03 - Use & Maintain Common Hand Tools
04 - Use & Maintain Special Equipment
05 - Perform Receiving Operations
06 - Identify & Store Material
07 - Distribute & Package Materials Properly

MEDICINE AND HEALTH

Subject/Designation - MEDICINE AND HEALTH
Level - Post-Secondary
Title - General Nursing Practice
By - Yarmouth Regional Hospital School of Nursing
TPOs: CCDO No. 3133 Nov. 1970

102

01 - Communicate Effectively & Organize Nursing
02 - Care For, Use Equipment, Instruments & Supplies
03 - Meet Safety Needs
04 - Meet Physical Needs
05 - Carry Out Emergency Procedures
06 - Administer Medication
07 - Recognize Symptoms & Conditions
08 - Initiate Rehabilitative Measures
09 - Practice Preventive Measures
10 - Administer Specific Nursing Care
11 - Develop Personal Competence
12 - Meet Psychological Needs

6.

Subject/Designation - MEDICINE AND HEALTH
Level -
Title - Child Mental Health Service June 1974
By - Atlantic Child Guidance Centre, Halifax, Nova Scotia
CCDO No. 3139

TPO's

107

01 - Advocate for Children
02 - Apply Activity Group Techniques
03 - Apply Verbal Group Techniques
04 - Do Activity Therapy
05 - Do Basic Therapy
06 - Intervene in Crisis Problems
07 - Work in Team Setting
08 - Communicate with other Professionals
09 - Teach
10 - Diagnose and Choose Treatment
11 - Administer

Subject/Designation - MEDICINE AND HEALTH
Level - Occupational Training
Title - Practical Nursing

By - Curriculum Development Branch
Department of Education
Province of British Columbia May, 1973

TPOs: CCDO No. 3135

103

01 - Apply Elements of Health Care
02 - Assist in Meeting the Needs for Nutrition
03 - Assist in Meeting the Needs for Elimination
04 - Assist in Meeting the Needs for Protection
05 - Assist in Meeting the Needs for Respiration
06 - Assist in Meeting the Needs for Mobility
07 - Assist in Meeting the Needs for Sensory Satisfaction
08 - Assist in Meeting the Needs for Self-Esteem, Achievement, Love and Affection
09 - Develop Personal and Vocational Skills
10 - Work Effectively with Others

Subject/Designation - MEDICINE AND HEALTH
Level - Occupational Training/Post-Secondary
Title - Pharmacy Assistant

By - Curriculum Development Branch
Department of Education
Province of British Columbia December, 1973

TPOs: CCDO No. 3151

104

01 - Develop Personal and Vocational Skills
02 - Assist in Preparing Prescriptions
03 - Maintain Inventory
04 - Keep Records
05 - Develop Typing Skill
06 - Apply Customer Relations Procedures & Techniques
07 - Communicate Effectively
08 - Apply Good Housekeeping Procedures

Subject/Designation - MEDICINE AND HEALTH
Level - Occupational Training
Title - Nursing Assistant

By - Northern College, Ontario. 1973

TPOs: CCDO No. 3134

105

01 - Communicate Effectively & Follow Direction of R.N. in Organizing Procedures
02 - Care For & Handle Equipment & Supplies
03 - Maintain A Safe & Therapeutic Environment
04 - Observe and Report Accurately
05 - Meet Physical Needs of Patient
06 - Meet Emotional Needs of Patient
07 - Develop Personal & Vocational Competencies
08 - Apply Special Nursing Skills

NOTE: - This Program is related to RNA Training

Subject/Designation - MEDICINE AND HEALTH
Level - Occupational Training
Title - Occupational Profile: Health Care Aide

By - Northern College, Ontario. 1973

TPOs: CCDO No. 3135

106

01 - Communicate Effectively & Promote Activation
02 - Develop Required Personal & Occupational Qualities
03 - Care For & Properly Handle Equipment & Supplies
04 - Maintain A Safe & Therapeutic Environment
05 - Meet Physical Needs of Resident
06 - Meet Emotional Needs of Resident
07 - Apply Special Nursing Skills
08 - Observe, Report & Record Accurately

METAL MACHINING

Subject/Designation - METAL MACHINING

Level - Occupational Training (40 weeks)

Title - Automatic Screw Machine Setter/Operator - Single Spindle

By - Humber College, Ontario. 1974.

TPOs: CCDC NO. _____

108

01 - TO MAKE MEASUREMENTS OF SCREW MACHINE PARTS
02 - TO MAKE A SIMULATION SET-UP
03 - TO MAKE SET-UP #1
04 - TO MAKE SET-UP #2
05 - TO MAKE SET-UP #3
06 - TO MAKE SET-UP #4
07 - TO MAKE SET-UP #5
08 - TO MAKE SET-UP #6
09 - TO MAKE SET-UP #7 (Cont'd on Card 2)

Subject/Designation - METAL MACHINING

Level - Occupational Training (40 weeks)

Title - Automatic Screw Machine Setter/Operator - Single Spindle (Card 2 of 2)

TPOs - Cont'd

10 - TO MAKE SET-UP #8
11 - TO MAKE SET-UP #9
12 - TO MAKE SET-UP #10

NOTE:- Simulations and Set-ups call for several tasks and the production of a specific job to standards.

Subject/Designation - METAL MACHINING

Level - Occupational Training (40 weeks)

Title - Automatic Screw Machine Setter/Operator - Multi-spindle

By - Humber College, Ontario. 1974.

TPOs: CCDC No. _____

01 - TO TAKE MEASUREMENTS OF SCREW MACHINE PARTS

02 - TO UNDERSTAND AND DESCRIBE MACHINE PRINCIPLES, MECHANISMS AND MOTIONS

109

03 - TO MAKE A TURRET-LATHE SET-UP

04 - TO MAKE A SIMULATION SET-UP

05 - TO SET-UP MACHINE TO SPECIMEN #1 LAYOUT

06 - TO SET-UP MACHINE TO SPECIMEN #2 LAYOUT

07 - TO SET-UP MACHINE TO SPECIMEN #3 LAYOUT

08 - TO SET-UP MACHINE TO SPECIMEN #4 LAYOUT

09 - TO SET-UP MACHINE TO SPECIMEN #5 LAYOUT (Cont'd on 2)

Subject/Designation - METAL MACHINING

Level - Occupational Training (40 weeks)

Title - Automatic Screw Machine Setter/Operator - Multi-spindle

(Card 2 of 2)

TPOs - Cont'd

10 - TO MAKE A DAVENPORT SIMULATION SET-UP

11 - TO SET-UP MACHINE TO SPECIMEN #6 LAYOUT

12 - TO SET-UP MACHINE TO SPECIMEN #7 LAYOUT

NOTE:- Simulations and setups call for several tasks and the production of a specific job to standards.

Subject/Designation - METAL MACHINING
Level - Occupational Training
Title - Machine Operator/Machine Setup Man
By - JOB CORE August 1969
CCDO No. 8313

110

TPO's
01 - Use Safety Procedures
02 - Use & Maintain Common Hand Tools
03 - Use & Maintain Special Tools & Equipment
04 - Fill Out Purchase Orders, Route Slips
05 - Perform Clean./Maintenance Tasks
06 - Perform Machine Setup Operations
07 - Operate Various Machines (Lathe, Milling, Shaper, Drill Press, Contour Machine & Grinding Machine)

METAL SHAPING AND FORMING

AIRCRAFT FABRICATION

Subject/Designation - METAL SHAPING & FORMING

Level - Occupational Training (Card 1 of 2)

Title - Welder Fitter

By - Humber College, Ontario. October, 1973.

TPOs: CCDO No. 8335-114-00

01 - To Run Multiple Weld Beads in Flat Position

02 - To Identify & Select Joints, Electrodes & Symbols

03 - To Run Downhand, Horizontal & Vertical Welds and Acr Cutting

04 - To Run Welds in the Vertical Up and Overhead Positions

05 - To Run Oxy-Acetylene Weld Beads in the Downhand Position

06 - To Run Oxy-Acetylene Corner, Edge, Fillet and Butt Joints

07 - To Cut Straight Lines, Bevels, and Pierce Holes with Oxy-Acetylene Cutting Torch (Cont'd on 2)

Subject/Designation - METAL SHAPING & FORMING

Level - Occupational Training (Card 2 of 2)

Title - Welder Fitter

TPOs - Continued

08 - To Run Braze Welded Joints by the Oxy-Acetylene Process

09 - To Run Tungsten Inert Gas Weld Beads in the Downhand Position

10 - To Run Tungsten Inert Gas Corner, Lap, Fillet and Butt Welds

11 - To Run Metal Inert Gas Weld Beads in the Downhand Position

12 - To Run Metal Inert Gas Lap, Fillet and Butt Welds in Steel and Aluminum

Note: - Instructor Produced Chart
Fully Operational and Individualized

112

Subject/Designation - METAL SHAPING & FORMING
Level - Occupational Training
Title - Welding Fabrication

By - Nova Scotia New Start Corp. July, 1971

TPOs: CCDO No. 8335

01 - Communicate Effectively
02 - Maintain Safe & Efficient Work Environment
03 - Use Shop Tools & Equipment
04 - Identify Metal to be Welded & Select Filler and Shielding Material
05 - Weld
06 - Maintain & Set Up Equipment
07 - Prepare & Assemble Materials
08 - Operate Different Types of Welding Machines
09 - Determine Quality of Finished Work

113

Subject/Designation - METAL SHAPING AND FORMING
Level - Occupational Training (14 weeks)

Title - Brake Shear and Press Set-up Operator

By - Humber College, Ontario. 1973

TPOs: CCDO NO. 8334-114-01

01 - Identify the Pressworking Industry & Machinery
02 - Use Hand Tools and Measuring Equipment
03 - Use Sheet Materials of Various Types and Specifications
04 - Calculate, Area, Percent, Fractions, Decimals and Angle Geometry
05 - Read Blueprints, and Lay Out on Sheet Metal
06 - Operate the Power Shear
07 - Plan, Sequence and Set-up on Power Shear
08 - Insert Dies (Pre-selected) & Operate Press Brake
09 - Select Dies & Set Stops & Guides on Press Brake
10 - Perform Punching, Forming & Notching Operations
11 - Perform Successive Operations from One Machine Set
12 - Perform Basic Set-up Operation on a Punch Press

Note:-Related to Manufactured Metal Products Assembler/Fabricator

Subject/Designation - METAL SHAPING AND FORMING
Level - Occupational Training
Title - Sheet Metal Worker

By - JOB CORE August 1969

CCDO No. 8333

TPO's

114

01 - Use Safety Procedures
02 - Use & Maintain Common Hand Tools, Special Tools, Measuring/Marking Equipment
03 - Estimate Time & Cost of Work
04 - Select Gauge Materials for Job
05 - Apply Mathematical Principles
06 - Perform Layout & Design Operations
~~07 - Perform Cutting, Bending & Forming Operations on Metal~~
08 - Fasten Sheet Metal Components
09 - Construct Common Sheet Metal Components
10 - Construct Offsets
11 - Repair Damaged Sheet Metal

Subject/Designation - METAL SHAPING AND FORMING
Level - Occupational Training
Title - Welder

By - JOB CORE August 1969

CCDO No. 8335-126

TPO's

115

01 - Use Safety Procedures
02 - Use First Aid Procedures for Burns
03 - Use Blueprints
04 - Apply Theory of Welding
05 - Test Welds
06 - Identify Metals
07 - Perform Oxyacetylene Welding & Cutting Operations
08 - Perform Arc Welding Operations
09 - Perform Tungston-Inert Gas Welding Operations
10 - Perform Metal-Inert Gas Welding Operations

Subject/Designation - METAL SHAPING & FORMING - AIRCRAFT FABRICATING

Level - Occupational Training

Title - Airframe Subassembling

By - A.V.E., Nova Scotia Sept. 1974

CCDO No. _____

116

TPO's

01 - Perform General Shop Procedures
02 - Interpret Work Orders
03 - Interpret & Use Blueprints & Instructions
04 - Select, Use & Care for Hand Tools
05 - Layout Work, Make & Use Templates
06 - Measure Using Precision Measuring Equipment
07 - Identify & Work Materials According to their Properties
08 - Operate Basic Floor Mounted Machines
09 - Manufacture Detail Parts
10 - Clean & Treat Metals
11 - Co-ordinate & Assemble Parts

MOTOR TRANSPORT

Subject/Designation - MOTOR TRANSPORT
Level - Occupational Training
Title - Truck Driver (Heavy & Light)
By - JOB CORE

August 1969
CCDO No. 9175

117

TPO's

01 - Use & Practice Safety & First Aid Procedures
02 - Operate Various Types of Vehicles, Trucks, Trailers
03 - Identify and Operate Various Types of Equipment
04 - Perform Various Vehicle Maneuvers
05 - Operate on Various Road Conditions
06 - Connect/Disconnect Trailers
07 - Operate Two-Way Radio
08 - Apply Local & Road Condition Regulations
09 - Perform Cleaning & Servicing Operations on Vehicle
10 - Perform Cargo Handling Operations
11 - Perform Emercency Expedients
12 - Fill Out Operator Forms, Records & Reports

Subject/Designation - PRINTING
Level - Occupational Training

Title - Offset Printer

By - JOB CORE August 1969

CCDO No. 9512

118

TPO's

01 - Use Safety Procedures
02 - Keep Equipment Clean
03 - Repair/Replace Broken Parts
04 - Store Materials
05 - Perform Camera & Darkroom Operations
06 - Perform Stripping Operations
07 - Perform Platemaking Operations
08 - Perform Offset Press Operations
09 - Perform Cutting & Binding Operations

Subject/Designation - PROCESSING FOOD, BEVERAGES & RELATED OCCUPATIONS
Level - Occupational Training

Title - Baker

By - JOB CORE August 1969

CCDO No. 8213

119

TPO's

01 - Use Safety Procedures
02 - Apply Rules of Hygiene
03 - Select & Read Recipes
04 - Use Knowledge of Measurement (liquid units, dry units)
05 - Use Bakery Goods Preparation Terms & Baking Terms
06 - Use Knowledge of Action & Use of Ingredients
07 - Use Baking Tools & Implements
08 - Operate Major Baking Equipment
09 - Perform Baking Operations
10 - Perform Bakery Management Procedures

REPAIRING AND SERVICING

APPLIANCE SERVICING & REPAIRING

ELECTRICAL/ELECTRONIC REPAIR

FABRICATING AND ASSEMBLING METAL PRODUCTS

MECHANICS & REPAIRMEN - PRECISION INSTRUMENTS

ASSEMBLING TEXTILE PRODUCTS

MECHANICS & REPAIRMEN

FABRICATING AND ASSEMBLING ELECTRICAL/ELECTRONIC EQUIPMENT

120

Subject/Designation - APPLIANCE SERVICING & REPAIRING

Level - Occupational Training

Title - Appliance Service Repairman - Occupational Profile

By - Northern College, Ontario. 1973

TPOs: CCDO No. 8533-126-00

01 - COMMUNICATE EFFECTIVELY IN WORK ENVIRONMENT AND APPLY GOOD BUSINESS PRACTICE
02 - APPLY MATHEMATICAL OPERATIONS TO DAILY WORK
03 - USE SILVER SOLDERING AND BENCHWORK TECHNIQUES
04 - APPLY DIAGNOSTIC AND TEST PROCEDURES AND TROUBLESHOOTING TECHNIQUES
05 - SERVICE AND REPAIR LAUNDRY PRODUCTS
06 - SERVICE AND REPAIR KITCHEN PRODUCTS
07 - SERVICE AND REPAIR REFRIGERATION EQUIPMENT
08 - READ AND INTERPRET BASIC AND ELECTRICAL BLUEPRINTS AND DO BASIC SKETCHING

121

Subject-Designation - APPLIANCE SERVICING & REPAIRING

Level - Occupational Training

Title - Domestic Appliance & Repair Service

By - Nova Scotia Newstart Inc. 1970.

TPOs: CCDO No. _____

01 - COMMUNICATE EFFECTIVELY IN WORK ENVIRONMENT
02 - PERFORM GENERAL DUTIES
03 - USE REPAIR TOOLS & EQUIPMENT
04 - ADJUST & REPLACE MECHANICAL EQUIPMENT & CONTROLS
05 - SERVICE, REPAIR & OVERHAUL TRANSMISSIONS & DRIVES
06 - USE MEASURING & TESTING DEVICES
07 - SERVICE & REPAIR ELECTRICAL SYSTEMS
08 - ADJUST & REPAIR ELECTRICAL CONTROLS
09 - SERVICE & REPAIR ENGINES
10 - SERVICE & REPAIR ELECTRIC MOTORS
11 - INSTAL MAJOR APPLIANCES

Subject/Designation - APPLIANCE SERVICING & REPAIRING
Level - Occupational Training
Title - Electrical Appliance Repairman
By - JOB CORE August 1969
CCDO No. 8533

TPO's

122

01 - Use Safety Procedures
02 - Use & Maintain Common Hand Tools & Special Tools
03 - Use Test & Measuring Equipment
04 - Recognize & Interpret Diagrams, Instrument Readings, Codes & Related Information
05 - Take Inventory & Order Parts If Necessary
06 - Estimate Cost & Time of Repairs
07 - Perform Circuitry Repair Operations
08 - Perform Electric Motor & Solenoid Repairs
09 - Perform Heating Element Repairs
10 - Repair Auxiliary Systems
11 - Perform Associated, Miscellaneous Operations

Subject/Designation - ELECTRICAL/ELECTRONIC REPAIR
Level -
Title - Electrician
By - JOB CORE August 1959
CCDO No. 8733

TPO's

125

01 - Use Safety Procedures
02 - Use and Maintain Common & Special Tools & Test & Measuring Equipment
03 - Minimize Waste of Materials
04 - Apply Principles of Electricity
05 - Use and Understand Electrical Circuit Diagrams
06 - Apply National Electrical Code
07 - Estimate Costs
08 - Install Electrical Hardware
09 - Test Installed Circuitry
10 - Maintain Electrical Controls

123

Subject/Designation - ELECTRICAL/ELECTRONIC REPAIR

Level - Occupational Training (40 weeks) (Card 1 of 2)

Title - Electronics - (Home Entertainment) Radio and T.V. Repair

By - Humber College, Ontario. 1973

TPOs: CCDO No. 8537-000-00

01 - Comprehend Introduction to Course, Instruction and Content

02 - Solve Course-Related Mathematical Problems

03 - Select & Use Materials & Components as Used with Course-Related Systems

04 - Select & Use Hand & Power Tools

05 - Identify & Analyze Signals & Electrical Laws

06 - Read, Interpret, Analyze & Sketch Technical Drawings, Specifications & Instruction Manuals

(Cont'd on 2)

Subject/Designation - ELECTRICAL/ELECTRONIC REPAIR

Level - Occupational Training (40 weeks) (Card 2 of 2)

Title - Electronics - (Home Entertainment) Radio and T.V. Repair

TPOs (Continued)

07 - Select & Use Test Equipment & Procedures

08 - Align Home Entertainment Equipment

09 - Troubleshoot & Repair Home Entertainment Equipment

10 - Identify, Set Up and Operate Home Entertainment Equipment

11 - Deal with Administrative and Communication Requirements and Life Skills

NOTE:- Instructor prepared chart.
Program undeveloped as of July, 1974

Subject/Designation - FABRICATING & ASSEMBLING ELECTRICAL/ELECTRONIC EQUIPMENT
Level - Occupational Training
Title - Radio and Television Repairman (Card 1 of 2)
By - JOB CORE, August 1969

CCDO No. 8534

125.1

TPO's

01 - Use Safety Procedures
02 - Use & Maintain Hand Tools, Special Tools, Test/Measuring Equipment
03 - Know & Apply Ohm's Law
04 - Apply Characteristics of Series/Parallel Circuits
05 - Know & Apply Basic AC & DC Electric Principles
06 - Use Knowledge of Conductors & Insulators Characteristics
07 - Know Functions/Operations & Characteristics of Electronic Components & Controling Components
08 - Know Function of Electronic Circuits
09 - Recognize & Interpret Symbols, Terms, Readings & Codes

Subject/Designation - FABRICATING & ASSEMBLING ELECTRICAL/ELECTRONIC EQUIPMENT
Level - Occupational Training (Card 2 of 2)
Title - Radio and Television Repairman

TPO's - Continued

10 - Perform Troubleshooting Procedures
11 - Install/Remove Components
12 - Repair & Align: Radio
13 - Repair & Align: Television
14 - Install Radio and/or Television

126

Subject/Designation - FABRICATING AND ASSEMBLING METAL PRODUCTS

Level - Occupational Training (14 weeks)

Title - Manufactured Metal Products Assembler/Fabricator

By - Humber College, Ontario. 1973

TPOs: CCDO No. 8520-000-01

01 - Identify the Assembly Industries
02 - Select, Use & Maintain Hand Tools
03 - Identify & Select Assembly Materials
04 - Select & Use Measuring Tools & Perform Shop Calculations
05 - Interpret Assembly & Detail Drawings, Shop Sketches, Blueprints & Work Order Sheets
06 - Select, Use & Maintain Drilling & Threading Equipment
07 - Select & Install Fastening Devices
08 - Operate Welding & Soldering Equipment
09 - Layout & Fabricate Assembly Components
10 - Assemble Pre-Manufactured Parts
11 - Apply Metal Finishing Techniques

NOTE:-Related to Brake Shear & Press Set-Up Operator

128

Subject/Designation - MECHANICS & REPAIRMEN - Precision Instruments

Level - Occupational Training (40 weeks)

Title - Camera Repair Mechanic

By - Humber College, Ontario. September, 1973

TPOs: CCDO No. 8588-126-00

01 - Identify, Apply & Operate Photo Equipment & Process
02 - Repair Basic Photographic Equipment
03 - Select & Use Measuring Tools & Equipment
04 - Select & Use Hand & Hand-power Tools
05 - Select & Use Machine Tools
06 - Read, Interpret & Produce Technical Drawings
07 - Select & Use Materials Related to Photo Equipment
08 - Solve Mathematical Problems Related to Photographic Equipment Repair
09 - Deal with Administrative & Communicative Requirements

Note:- Instructor developed with aid of advisory group

Subject/Designation - ASSEMBLING TEXTILE PRODUCTS

Level - Occupational Training

Title - Upholstering

By - Adult Vocational Education
Province of Nova Scotia May, 1973

TPOs: CCDO No. 8562-110-00

129

01 - Communicate in Occupation
02 - Select & Use Tools
03 - Strip Material from Furniture
04 - Repair Frames & Restore Finish on Show Wood
05 - Prepare Webbing & Springs
06 - Restuff & Repad Furniture
07 - Identify, Layout & Cut Materials
08 - Machine Sew Materials
09 - Apply Upholstery Fabrics
10 - Upholster Cars, Trucks, Campers & Boats
11 - Make Fabric Repairs
12 - Estimate & Organize Work

Subject/Designation - ELECTRICAL/ELECTRONIC REPAIR

Level - Occupational Training

Title - Electronic Repair

By - Adult Vocational Education, Nova Scotia

TPOs: CCDO No. 8535 1973

124

01 - Measure Physical Parameters
02 - Measure Electrical Parameters
03 - Operate Testing Equipment
04 - Read & Interpret Diagrams & Specifications
05 - Communicate Effectively
06 - Use & Care for Tools, Equipment, Materials
07 - Perform Mathematical Calculations
08 - Analyze & Troubleshoot Electro-Mechanical Equipment
09 - Maintain Operational Equipment
10 - Modify/Adapt Equipment to Requirements
11 - Repair Electro-Mechanical Equipment
12 - Apply Safety Precautions

Subject/Designation - REPAIRING AND SERVICING
Level - Occupational Training
Title - Electronics Assembler
By - JOB CORE August 1969
CCDO No. 8534

127

TPO's
01 - Use Safety Procedures
02 - Use & Maintain Common Hand Tools
03 - Use & Maintain Special Tools
04 - Use & Maintain Test, Measuring Equipment
05 - Recognize & Interpret Diagrams, Symbols, Terminology, Readings & Codes
06 - Perform Layout & Job Preparation Procedures
07 - Perform Proper Operations Re: Hardware, Control & Meter Mounting
08 - Install Components
09 - Repair Defective Equipment

Subject/Designation - (CONSTRUCTION) REPAIRING + SERVICING ASSEMBLING TEXTILE PRODUCTS
Level -
Title - Furniture Upholsterer
By - JOB CORE August 1969
CCDO No. 8562

130

TPO's
01 - Use Safety Precautions
02 - Use & Maintain Common Hand Tools
03 - Use & Maintain Special Tools
04 - Use & Maintain Equipment
05 - Tell Customer Pros/Cons of Material
06 - Estimate Time & Cost of Repairs
07 - Prepare Furniture for Repairs
08 - Perform Upholstery Repair Operations

131

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training

Title - Heavy Duty Equipment Mechanic

By - Northern College, Ontario. 1973.

TPOs: CCDO No. _____

01 - Communicate in Work Environment
02 - Perform Mathematical Operations
03 - Apply Scientific Principles
04 - Perform General Duties
05 - Explain & Outline Operation of Internal Combustion Engines
06 - Check & Overhaul Engine Components
07 - Check & Overhaul Belt & Chain Drivers
08 - Check & Overhaul Exhaust Systems
09 - Relate Types & Functions of Electrical Systems
10 - Repair & Overhaul Electrical System
11 - Identify Types & Explain Functions of Power Trains

(Cont'd on Card 2)

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training

Title - Heavy Duty Equipment Mechanic - (Card 2 of 2)

By - Northern College, Ontario.

TPOs (Cont'd):

12 - Repair & Overhaul Power Trains
13 - Identify Types & Explain Functions of Running Gear Wheel & Crawler Vehicles
14 - Repair Running Gear Wheel & Crawler Tractors
15 - Repair & Overhaul Brake Systems
16 - Identify Components & Relate Principles of Hydraulic Systems
17 - Repair & Overhaul Hydraulic Systems
18 - Repair Attachments & Ancillary Equipment
19 - Weld with Arc & Oxy-acetylene

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training

Title - Motor Vehicle Repair,(Mechanical) M.V.R.

By - Nova Scotia New Start 1970

TPOs: CCDO No. 8581-111-11

132

01 - Communicate Effectively in Work Environment
02 - Perform General Shop Duties
03 - Use Automotive Shop Equipment
04 - Use Repair Tools and Equipment
05 - Adjust & Replace Mechanical Equipment & Controls
06 - Use Measuring & Testing Devices
07 - Service & Repair Steering, Suspension and Brake Systems
08 - Service & Repair Cooling & Exhaust Systems
09 - Service & Repair Fuel Systems
10 - Service & Repair Electrical Systems
11 - Service, Repair & Overhaul Transmissions & Drives
12 - Service & Repair Engines
13 - Repair & Overhaul Engines

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training

Title - Motor Vehicle Repair,(Body) M.V.R.

By - Adult Vocational Education, Province of Nova Scotia 1973

TPOs: CCDO No. 8581-111-11

133

01 - Communicate Effectively in Work Environment
02 - Perform General Shop Duties
03 - Use Repair Tools and Equipment
04 - Adjust & Replace Mechanical Equipment & Controls
05 - Use Measuring & Testing Devices
06 - Service & Repair Steering, Suspension & Brake Systems & Cooling Systems
07 - Service & Repair Electrical Systems
08 - Remove & Replace Components Parts of Automobile
09 - Select, Use Materials, Prime & Paint
10 - Straighten & Align Framework
11 - Shape Body Contours

134

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training (40 weeks)

Title - Marine and Small Power Equipment Mechanic

By - Humber College, Ontario. February, 1974

TPOs: CCDO No. 8592-000-01

01 - Plant & Shop Safety
02 - Locate, Maintain & Use Reference Materials
03 - Maintain, Identify, Select & Use Hand Tools
04 - Describe Basic Two & Four Stroke Cycle Engine Theory & Function
05 - Identify Types of Lubricants & Greases and their Application
06 - Identify & Explain Operation of Fuel Systems
07 - Identify & Explain Operation of Ignition Systems
08 - Identify, Select, Use & Maintain Measuring Equipment
09 - Identify & Explain Operation of Electrical Systems
10 - Identify, Select & Use Joining Material

(Cont'd on 2)

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training (40 weeks)

Title - Marine and Small Power Equipment Mechanic

Card 2 of 4

TPOs - Continued

11 - Disassemble, Reassemble, Measure Component Parts of Two Stroke-Cycle Short Block Assembly
12 - Disassemble, Reassemble, Measure Component Parts of Four Stroke-Cycle Short Block Assembly
13 - Disassemble, Reassemble, Adjust, Lubricate and Sharpen Lawnmowers
14 - Adjust, Lubricate, Overhaul Riding Tractor Running Gear & Transmission & Service Electrical System
15 - Adjust, Lubricate & Overhaul Drive System, Tines & Transmission Tiller
16 - Disassemble, Reassemble, Lubricate and Adjust Edger Drive System

(Cont'd on 3)

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training (40 weeks)

Title - Marine and Small Power Equipment Mechanic

Card 3 of 4

TPOs - Continued

17 - Adjust, Lubricate & Service Snowblower Drive and Impeller
18 - Tuneup, Disassemble, Reassemble Powerhead & Lower Unit Outboard Motor (up to 20 hp)
19 - Tuneup, Disassemble, Reassemble Powerhead, Lower Unit & Remote Controls Outboard Motor (20-40 hp)
20 - Tunepup, Disassemble, Reassemble Powerhead, Lower Unit & Remote Controls, Outboard Motor (40 hp & over)
21 - Select, Repair & Install Propellors
22 - Identify, Select & Use Mechanical Drive Components
23 - Lubricate, Adjust & Overhaul Snowmobiles
24 - Lubricate, Adjust & Overhaul Inboard/Outboard Engines & Drive Units

(Cont'd on 4)

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training (40 weeks)

Title - Marine and Small Power Equipment Mechanic

TPOs - Continued

Card 4 of 4

25 - Adjust, Lubricate & Overhaul Mini-Bikes
26 - Adjust, Lubricate & overhaul Chainsaws
27 - Describe Operation of, Disassemble, Reassemble, Diagnose Faults & Repair Rotary Engines
28 - Identify Types of, Diagnose & Repair Faults in, & Adjust Trailer Running Gear & Electrical Wiring
29 - Identify, Select and Install Marine Hardware & Outboard Motors & Accessories
30 - Overhaul, Lubricate, Adjust Bicycles
31 - Repair and Refinish Plastics

Note:- Related skills have been indicated for a variety of pieces of equipment, hence the large number of TPOs.

Subject/Designation - MECHANICS & REPAIRMEN
Level - Occupational Training (40 weeks)
Title - Industrial Maintenance Mechanic (Packaging)
By - Humber College, Ontario Sept. 1974 (Card 1 of 2)

CCDO No. 8584

135

TPO's

01 - Describe Industries Scope, Materials, Equipment & Terms
02 - Identify & Use Safest Procedures in Packaging Equipment
03 - Use & Care for Measuring Equipment
04 - Read & Interpret Engineering Drawings
05 - Identify, Use & Care for Hand Tools
06 - Use Marking Out Equipment & Bench Tools to Produce Part to Drawing Tolerences
07 - Use Welding Equipment to Join Ferrous Metals
08 - Use Soldering & Brazing Equipment to Join Metals

Subject/Designation - MECHANICS & REPAIRMEN
Level - Occupational Training (40 weeks) (Card 2 Of 2)
Title - Industrial Maintenance Mechanic (Packaging)
TPO's - Continued

09 - Use Drills, Taps, Reamers, C'sk & C'bores to Produce Part to Drawing Specifications
10 - Turn & Bore on Lathe to Drawing Specifications
11 - Use Mills & Surface Grinder to Produce Part to Drg. Specs.
12 - Maintain, Repair, Replace Power Transmission Components
13 - Adjust, Maintain & Replace Mechanical Actuators
14 - Adjust & Maintain Material Handling Systems
15 - Identify, Maintain & Replace Electrical Components
16 - Maintain, Repair & Replace Fluid Power Components
17 - Maintain, Repair & Adjust Control Systems
18 - Identify & Solve Common Packaging Machine Problems

Subject/Designation - MECHANICS & REPAIRMEN

Level - Occupational Training

Title - Small Engines Maintenance

By - Northern College, Ontario. 1973

TPOs: CCDO No. _____

136

01 - Communicate Effectively in Work Environment

02 - Perform General Duties and Practice Safety

03 - Use Automotive Shop Equipment

04 - Use Repair Tools and Equipment

05 - Adjust and Replace Mechanical Equipment & Controls

06 - Use Measuring and Testing Devices

07 - Service & Repair Steering Suspension & Brake Systems

08 - Service and Repair Colling & Exhaust Systems

Subject/Designation - MECHANICS AND REPAIRMEN
Level - Occupational Training
Title - Small Gas Engine Repair
By - JOB CORE August 1969
CCDO No. 8589

137

TPO's
01 - Use Safety Procedures
02 - Use & Maintain Tools & Measuring & Test Equipment
03 - Interpret Repair Manuals
04 - Take Inventory of Parts & Order Parts If Necessary
05 - Know 2 - 4 - Stroke Engines & Be Able to Identify Various Engines
06 - Troubleshoot Equipment
07 - Estimate Time & Cost of Repair
08 - Clean, Test, Replace and/or Repair Parts of Ignition System
09 - Adjust, Clean, Replace & Repair Parts of Carburetor
10 - Remove, Reface, Clean, Grind & Replace Parts of Valve Train
11 - Perform Engine Repair Operations
12 - Repair/Replace Lubrication System
13 - Perform Common Engine Related Repairs

Subject/Designation - MECHANICS & REPAIRMEN 9.
Level -
Title - Air Conditioning & Refrigeration Mechanic
By - JOB CORE August 1969
CCDO No. 8733-114

138

TPO's
01 - Use Safety Procedures in Working with Tools & Refrigerants
02 - Use properly Tools & Test Equipment Associated with Vocational Area
03 - Apply Electrical and Thermodynamic Principles
04 - Estimate Cost of Repair
05 - Read Blueprints
06 - Replace properly Lines & Fittings
07 - Replace Refrigerant within a Cooling System
08 - Repair & Maintain Refrigerant & Air Conditioning Parts
09 - Repair & Maintain Refrigerant & Air Conditioning Controls
10 - Perform Post-Repair Operations

Subject/Designation - MECHANICS & REPAIRMEN

Level -

Title - Instrumentation Mechanic

By - Humber College, Ontario 1974

CCDO No. 8588-118-00

TPO's

01 - Comprehend the Introduction to Course, Instruction & Contents
02 - Solve Course-Related Mathematical Problems
03 - Select & Use Materials & Components as Used with Course Related Systems
04 - Select & Use, Hand & Power Tools
05 - Identify & Analyze Signals & Electrical Laws
06 - Read, Interpret, Analyze & Sketch Technical Drawings; Specifications & Instructions
07 - Select & Use Test Equipment to I.S.A. Standards
08 - Install, Calibrate & Analyze Instrument Systems
09 - Align Instruments & Systems
10 - Design & Operate Process Control Systems
11 - Teouble-Shoot & Repair Instruments & Systems
12 - Deal with Administrative & Communications Requirements

139

Subject/Designation - MECHANICS & REPAIRMEN

Level -

Title - Air Conditioning Installer

By - JOB CORE August 1969

CCDO No. _____

TPO's

01 - Observe Safety Practices
02 - Care for and Use Common and Special Tools
03 - Care for and Use Properly Measuring and Test Equipment
04 - Estimate Costs of Installation
05 - Estimate Cooling Requirements
06 - Follow Plans & Diagrams
07 - Convert Furnace and Install Large Domestic Air Conditioning Unit
08 - Install Domestic Window Type Air Conditioner

140

Subject/Designation - MECHANICS AND REPAIRMEN
Level - Occupational Training
Title - Office Machine Repair
By - JOB CORE August 1969
CCDO No. 8585

141

TPO's
01 - Use Safety Procedures
02 - Use & Maintain Hand Tools & Special Tools
03 - Use & Maintain Test Equipment
04 - Read & Interpret Repair Manuals
05 - Negotiate Preventive Maintenance
06 - Estimate Time & Cost of Repairs
07 - Use Correctly Soldering Equipment
08 - Prepare/Perform Typewriter Repair Operations (Remove/Replace/Adjust)
09 - Perform Calculator Repairs
10 - Perform Miscellaneous Machine Repairs (Adding Machine, Card Sorting Machines, Billing Machines, Tabulating Machines & Embossing Machines)

SALES

142

Subject/Designation - SALES
Level - Occupational Training
Title - General Sales Clerk

By - Adult Vocational Education,
Province of Nova Scotia. May, 1973.

TPOs: CCDO No. 5137

01 - Perform Cashier Duties
02 - Control Stock
03 - Price & Code
04 - Merchandise Goods
05 - Perform General Housekeeping
06 - Apply Store Policy
07 - Develop Product Knowledge
08 - Assist Customers
09 - Take Inventories
10 - Receive Merchandise
11 - Communicate Effectively

143

Subject/Designation - SALES (See also Construction)
Level - Occupational Training
Title - Building Supplies Sales

By - Adult Vocational Education,
Province of Nova Scotia. March, 1973

TPOs: CCDO No. 5135

01 - Maintain Stock & Organize Work
02 - Provide Service to Customers
03 - Communicate Effectively
04 - Sell Product
05 - Use & Care For Tools & Equipment
06 - Develop & Apply Product Knowledge
07 - Develop & Price Estimates & Products
08 - Merchandise
09 - Perform Commercial Mathematical Calculations
10 - Identify & Correlate Sources of Information
11 - Make out and Complete Forms & Documentation
12 - Promote Business

Subject/Designation - SALES - RETAIL SALES CLERK

Title - Occupational Training

Level - Retail Sales Clerk

By - Job Core

August 1969
CCDO No. 5137-114-00

TPO's

01 - Maintain Good Public Relations With Customers
02 - Maintain Clean & Orderly Display of Non-Defective Merchandise
03 - Utilize Knowledge of Selling Points & Value of Merchandise
04 - Assist Customer in Choosing Merchandise
05 - Demonstrate Article & Instruct Customer in Its Care & Use
06 - Create Desire for Product, Close Sale & Suggest Purchase of Additional Goods
07 - Arrange Delivery if Necessary
08 - Replace Display with New Merchandise
09 - Keep Record of Sales
10 - Meet Objections & Handle Complaints & Give General Assistance

145

Subject/Designation - SALES/CARPETING
Level - Occupational Training/Post Secondary
Title - Sales Specialist - Carpeting
By - Humber College, Ontario. June, 1973.

TFOs: CCDO No. 5130

01 - Identify Types of Carpet Manufacturing Processes
02 - Analyze & Evaluate Carpet Systems
03 - Identify Carpet Constructions Components Specifications
04 - Analyze & Evaluate Installation Systems
05 - Recommend Maintenance Program for Carpets
06 - Sell Goods & Services
07 - Communicate Effectively
08 - Interpret & Apply Related Laws & Standards, Business Practices
09 - Apply Business Operating Procedures

NOTE:-This and 3 other related charts have been combined for one post-secondary program - Resilient Flooring Specialist, Installation Specialist Technician(Carpeting), Retail Sales Specialist (Carpeting).
Produced by DACUM Committee.

146

Subject/Designation - SALES/CARPETING
Level - Occupational Training/Post-Secondary
Title - Retail Sales Specialist (Carpeting)
By - Humber College, Ontario. November, 1973.

TPOs: CCDO No. 5130

01 - Communicate Effectively
02 - Make Calculations re Estimates, Lay Outs, Costs (Lower Skill Level)
03 - Apply Sales Techniques
04 - Implement Retail Procedures
05 - Apply Product Knowledge to Sales Situations
06 - Apply Basic Color & Decor Principles

Note:- This and 3 other related charts have been combined for one post-secondary program -
Resilient Flooring Specialist
Installation Specialist Technician (Carpeting)
Sales Specialist (Carpeting)
Produced by DACUM Committee.

S E R V I C E S

FOOD/BEVERAGE PREPARATION
AND SERVICE

HOUSEKEEPING

LODGING AND ACCOMMODATION

PROTECTIVE SERVICE

147

Subject/Designation - FOOD/BEVERAGE PREPARATION & SERVICE

Level - Occupational Training

Title - Bartending & Service

By - Adult Vocational Education
Province of Nova Scotia April, 1973

TPOs: CCDO No. 6123-111-11

01 - Maintain Inventory
02 - Operate Service Bar
03 - Communicate Effectively with Customers
04 - Prepare Bar for Opening & Closing
05 - Maintain Clean Equipment
06 - Operate Cash Systems
07 - Mix Drinks
08 - Care for & Service Wine, Beer, Spirits & Liqueurs
09 - Serve
10 - Supervise Staff
11 - Develop Personal Characteristics

148

Subject-Designation - FOOD/BEVERAGE PREPARATION & SERVICE

Level - Occupational Training

Title - Retail Meatcutting

By - Adult Vocational Education,
Province of Nova Scotia. March, 1974.

TPOs: CCDO No. _____

01 - Communicate Effectively
02 - Use & Care For Tools, Equipment & Supplies
03 - Develop Product Knowledge
04 - Merchandise Meats
05 - Make Basic Meat Cuts
06 - Receive & Store Products
07 - Perform General Housekeeping
08 - Take Inventory
09 - Merchandise Variety, Offals & Smoked Meats
10 - Merchandise Fish & Poultry

149

Subject/Designation - FOOD/BEVERAGE PREPARATION & SERVICE

Level - Occupational Training

Title - Cook Training June, 1972

By - Dept. of Education, Curriculum Development Branch, Province of British Columbia.

TPOs: CCDO No. 6121-111-11

01 - Develop Personal and Vocational Skills

02 - Apply Safety & Accident Prevention Procedures

03 - Apply Elements of Kitchen Management

04 - Operate and Maintain Kitchen Equipment

05 - Prepare, Cook and Serve Vegetables

06 - Prepare, Cook & Serve Stocks, Sauces & Soups

07 - Prepare, Cook and Serve Meat & Poultry

08 - Prepare, Cook and Serve Seafood

09 - Prepare, Cook & Serve Dairy Products & Egg Dishes

(Cont'd on 2)

Subject/Designation - FOOD/BEVERAGE PREPARATION & SERVICE

Level - Occupational Training

Title - Cook Training Card 2 of 2

TPOs - Continued

10 - Prepare, Cook and Serve Desserts

11 - Prepare, Cook and Serve Cold Kitchen Products

12 - Prepare, Cook & Serve Cereal & Pasta Dishes

13 - Prepare, Cook & Serve Bakery Products

14 - Prepare and Serve Beverages

15 - Cut Meat, Poultry and Fish

16 - Use Applied Mathematics

Note:-Uses Tracks or grouping instead of discrete behavioural definitions

Back of Chart includes estimated hours per block or group

150

Subject/Designation - FOOD/BEVERAGE PREPARATION & SERVICE
(See also Lodging and Accommodation)

Level - Occupational Training

Title - Dining Waitress - Hostess Service

By - Adult Vocational Education
Province of Nova Scotia May, 1973

TPOs: CCDO No. 6125-111-11

01 - Work Stations & Sections
02 - Take, Place Orders & Make Suggestions
03 - Communicate with Customer
04 - Communicate & Work with Others
05 - Maintain Personal Appearance & Hygiene
06 - Prepare Tables
07 - Serve Liquors and Wines
08 - Act as Cashier
09 - Do Side Work
10 - Prepare and Serve Foods
11 - Serve as Hostess or Head Waitress

151

Subject/Designation - FOOD/BEVERAGE PREPARATION & SERVICE

Level - Occupational Training

Title - Cooking

By - Nova Scotia New Start Corp. 1970

TPOs: CCDO No. 6121 - 111 - 11

01 - Deep Fry
02 - Pan Fry, Broil & Bake
03 - Cook Vegetables
04 - Plan Menus, Portion & Display Foods
05 - Order, Handle & Store Foods
06 - Prepare Soups, Chowders and Sauces
07 - Make Break, Pastries & Desserts
08 - Use & Maintain Tools & Equipment
09 - Prepare Sandwiches, Salads & Cold Plates

152

Subject/Designation - FOOD/BEVERAGE PREPARATION & SERVICE
(See also Lodging and Accommodation)

Level - Occupational Training

Title - Food Service & Hotel Administration - Parts 1 & 2

By - Northern College, Ontario. 1972

TPOs: - Part 1 CCDO No. _____

01 - Communicate Effectively with Customers, Fellow Workers & Supervisors
02 - Order, Set & Serve Meals
03 - Order & Make Up Popular Soda Fountain Items
04 - Supervise Kitchen & Restaurant Operation

Part 2

05 - Function in Front Office as Day Clerk
06 - Book, Service & Function within Catering Office
07 - Function within Housekeeping Department as Maid Or Inspectress
08 - Function within a Bar or Lounge Operation
09 - Co-ordinate Reservations with Front Office in both Resort & Commercial Houses

(Cont'd on 2)

Subject-Designation -FOOD/BEVERAGE PREPARATION & SERVICE
(See also Lodging and Accommodation)

Level - Occupational Training

Title - Food Service & Hotel Administration - Parts 1 & 2

TPOs - Continued Card 2 of 2

10 - Communicate Effectively and Develop Personal Competence
11 - Supervise Hotel Services and Promote Facilities

Note:- Part 1 deals with the food service and restaurant supervision; while
Part 2 is primarily Hotel Administration

153

Subject/Designation - FOOD/BEVERAGE PREPARATION & SERVICE

Level - Occupational Training

Title - Waiter/Waitress

By - Dept. of Education, Curriculum Development Branch, Province of British Columbia. April, 1973

TPOs: CCDO No._____

01 - Develop Personal and Vocational Skills

02 - Apply Safety & Accident Prevention Procedures

03 - Maintain Suitable Grooming & Personal Hygiene

04 - Apply Sanitary Food Service Procedures

05 - Identify, Select & Use Food & Beverage Equipment and Tableware

06 - Apply Effective Menu Use & Selling Technique

07 - Apply Customer Relations Procedures

08 - Apply Counter or Coffee Shop Service Procedures

(Cont'd on 2)

Subject-Designation - FOOD/BEVERAGE PREPARATION & SERVICE

Level - Occupational Training

Title - Waiter/Waitress Card 2 of 2

TPOs - Continued

09 - Apply Dining Room Service Procedures

10 - Apply Beverage Service Procedures

11 - Apply Special Functions Service Procedures

12 - Apply Ordering & Guest Check Procedures

13 - Apply Elements of Management Related to Food and Beverage Service

Note:- Uses tracks or grouping
Divided into 3 phases at 120 hours each
Includes an advanced phase with options

154

Subject/Designation - HOUSEKEEPING

Level - Occupational Training - Note:- 3 months or 360 hours suggested

Title - Trained Homemaker

By - Dept. of Education,
Curriculum Development Branch,
Province of British Columbia. July, 1973.

TPOs: CCDO No. _____

01 - Develop Personal and Vocational Skills
02 - Apply and Teach Safety and First Aid in the Home
03 - Apply & Teach Principles of Health & Sanitation in the Home
04 - Apply & Teach Planning, Preparing, Serving of Meals & Subsequent Clean-up
05 - Practise and Teach Budgeting
06 - Apply and Teach General Housekeeping Procedures
07 - Assist with Health Care Needs of a Family
08 - Assist in Meeting the Needs for Self-esteem, Achievement, Love & Affection
09 - Communicate Effectively as Member of Health Team & Work Effectively with Others

155

Subject/Designation - HOUSEKEEPING

Level - Occupational Training

Title - Housekeeping-Homemaking Training

By - Nova Scotia New Start Corp. 1970

TPOs: CCDC No._____

01 - Manage the Household
02 - Maintain and Clean Household
03 - Do Laundry & Care for Clothing and Linens
04 - Care For & Use Appliances, Utensils & Dishes
05 - Cook & Serve Vegetables
06 - Cook & Serve Meats, Fish & Poultry
07 - Prepare & Serve Breakfasts, Snacks & Lunches
08 - Prepare & Serve Desserts
09 - Care for Children
10 - Care for Elderly, Chronically Ill & Convalescents
11 - Develop Personal Competence

156

Subject/Designation - LODGING AND ACCOMMODATION

Level - Occupational Training

Title - Hotel-Motel Housekeeping Service

By - Adult Vocational Education
Province of Nova Scotia June, 1973

TPOs: CCDO No. _____

01 - Organize & Supervise Work
02 - Clean Kitchenettes
03 - Organize, Care For & Use Equipment & Supplies
04 - Communicate & Work with Others
05 - Clean & Equip Bathrooms & Washrooms
06 - Clean Rooms, Corridors & Offices
07 - Observe Safety & House Rules
08 - Do Laundry

157

Subject-Designation - LODGING AND ACCOMMODATION
(See also Food/Beverage Preparation & Service)

Level - Post Secondary

Title - Hotel-Motel Restaurant Management

By - Holland College,
Prince Edward Island 1971

TPOs: CCDO No. _____

01 - Recognize & Provide for Individual Wants & Needs
02 - Communicate Effectively & Develop Per onal Competence
03 - Select, Train & Supervise Staff
04 - Manage Front Desk Operations
05 - Operate and Maintain Food Services
06 - Operate & Maintain Beverage Service
07 - Manage Housekeeping Activities
08 - Plan & Develop Purchasing Procedures
09 - Manage & Control Cost of Operations
10 - Plan & Organize Service Areas
11 - Plan & Organize Promotional Activities
12 - Implement & Control Sanitation Programs
13 - Set Up & Control Maintenance & Safety Programs
14 - Interpret & Apply Government Regulations

Subject/Designation - PROTECTIVE SERVICE

Level - Post-Secondary

Title - Police Technology

By - Holland College,
Prince Edward Island. February, 1971

TPOs: CCDO No. 6112

158

01 - Communicate Effectively
02 - Identify, Select & Handle Equipment
03 - Patrol & Maintain Security of Area
04 - Prepare & Maintain Records & Statistics
05 - Conduct Investigations
06 - Interpret Laws and Apply Powers of Arrest
07 - Prepare and Present Evidence in Court
08 - Organize, Manage and Operate Policy Services
09 - Develop Personal Competence and Attitudes

SOCIAL SERVICES

Subject/Designation - SOCIAL SERVICES
Level - ADULT
Title - Indigenous Community Work
By - Continuing Education, Halifax, Nova Scotia July 1974
CCDO No. _____

159

TPO's

01 - Diagnose & assess Communities
02 - Meet People
03 - Organize Groups
04 - Work with Groups
05 - Work with Individuals
06 - Work with Agencies
07 - Communicate
08 - Initiate & Develop Programs
09 - Handle Change
10 - Deal with Apathy & Negativism
11 - Organize & Administer Work

Subject/Designation - SOCIAL ~~SCIENCE~~ SERVICE - Psychological Counselling
Level -
Title - Psychological Counselling
By - University of Victoria, B.C. March 1973
CCDO No. _____

160

TPO's

01 - Communicate & Relate
02 - Identify & Specify Problems & Client Needs
03 - Apply Coulselling Methods
04 - Apply Special Group Counselling Methods
05 - Measure & Evaluate
06 - Serve as Consultant
07 - Apply Behaviour Change Techniques
08 - Administer Program of Services
09 - Organize & Conduct Vocational & Educational Counselling Programs
10 - Enlist & Utilize Community Services
111 - Employ Effective Instruction Techniques
12 - Develop & Implement Programs in Psychological Education
13 - Continue to Acquire Professional Competence

Subject/Designation - SOCIAL ~~SCIENCE~~ SERVICE
Level
Title - Youth Work
By - Nova Scotia Youth Agency, Tatamagouche Sept. 1972
CCDO No. 2339-199

TPO's

01 - Grow & Develop
02 - Communicate & Counsel
03 - Initate , Organize & Develop Programs
04 - Evaluate Programs & Activities
05 - Administrate
06 - Work with Groups
07 - Stimulate Learning
08 - Work with Individuals
09 - Diagnose or Assess Community
10 - Work through Bureacratic Organizations

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PART V

IMPLICATIONS AND CONCLUSIONS

SUMMARY OF ADVANTAGES AND DISADVANTAGES

Advantages

1. Chart is a device for staging systematic instructional development.
2. DACUM is a flexible tool, not an end in itself.
3. It can be done quickly.
4. It is a way of becoming responsive to local and community needs.
5. The chart allows for rational evaluation of students.
6. The instructor can get a picture of the entire program.
7. DACUM charting aids communication, pre-requisite identification and student tracking (monitoring) are made easier. Other institutions, instructors and agencies can easily see the nature of the program.

Disadvantages

1. The specificity of the chart depends heavily upon the skill and expertise of the co-ordinators.
2. The DACUM committee can reflect local biases.
3. The committee may build upward mobility into the chart - making the job look more difficult than it is.
4. Additional skills are required to operationalize charts.
5. DACUM charting does not help with deciding on or developing ways for students to learn.
6. Instructors may ignore the behavioural statements and proceed with content.
7. DACUM charting has not been shown to apply to all areas, it works well with skills.

upon the direction which Curriculum Development is taking.

Greater curriculum flexibility seems to be an emerging need. The concept of the "open college" is referred to more and more often. An ideal open college system would allow just about anyone to take any curriculum mix they wanted or needed in a learning style or mode that best suited them at any time of the day or year. Such an all-encompassing system would be enormously expensive, but certain reasonable trade-offs can be made which will allow for at least a partial meeting of the goal.

The concept of learning objectives (sometimes called performance objectives or behavioural objectives) is connected with DACUM charting. Learning objectives tend to break up whole areas of endeavour into discrete chunks. If present and future curricula are set out in terms of these discrete chunks these can be treated as data bits.

Computer techniques now exist which can set up large data bases with curriculum bits or objectives arranged within matrices or profiles. If we consider curriculum and DACUM to be dealing primarily with WHAT has to be learned and we build another parallel system which deals with the HOW, or the materials needed for learning, then we have the elements of a highly flexible system. The third key element to be added of course is HOW WELL or evaluation.

It will be possible to operate a Computer Managed Instructional System which comes very close to meeting the "open college" concept. Naturally we have over-simplified the situation, but DACUM is one way that such a data base of objectives could be built. Once the information is in the system according to activity and content then

pieces of it could be retrieved to build new combinations, i.e. unique courses to meet individual needs.

What would be some of the implications of such a system?

1. A measurable, behavioural approach to curriculum building could be introduced (if such were deemed desirable).
2. The business, industry and local community could become much more involved in shaping curriculum. Local decision making is possible.
3. Communication between institutions, regions, provinces would be possible with respect to curriculum requirements, expectations and standards. (Student transferability)
4. The world of work could become a much more realistic element within the curriculum by using the CCDO and building in job mobility.
5. Curriculum and instructional materials which have been already developed could be integrated into a larger system, hence helping to validate and improve such material through broader use.
6. New and existing curricula could go through some process similar to DACUM in order to allow them to become part of the data base.
7. The Ontario Ministry of Colleges and Universities has a very large, on the shelf, collection of training modules developed for the apprenticeship system which could be integrated into the whole system.

8. It is becoming evident that generic rather than specific skills need to be identified with respect to broad occupational areas or job families. DACUM charts and the analysis of data generated by charts in related jobs would allow us to do that.

9. Once a chart or set of objectives is established to meet an individual's needs then the pre-requisites can be easily identified by further analysis of the objectives and a knowledge of the related generic skills for the field. These can be tested for or added to the student's program.

10. Students following a particular chart are responsible for completing the objectives as stated, but the onus is also on the instructor to manage the learning environment so that the student can be successful. In other words, charts introduce accountability.

11. Computer-managed data (or careful people-managed data) can give information about the numbers of students who have or will be involved in certain learning experiences. This allows for more effective budgeting.

12. As in the last point, more effective staff planning could be possible.

13. Updating becomes less of a problem when the data is available via charts or in the computer.

14. Inter-agency and inter-institution co-operation on curriculum development becomes much more viable (assuming it is desired).

15. Information between training and funding agencies becomes easier to exchange. For example, funding could be on a basis of objectives contracted rather than hours or weeks contracted.

16. The computer-managed system could be extended to include tracking systems and begin forming records and statistics about the nature of the labour force. This would be essential to a Manpower policy scheme.

17. The system of short monographs now used to give narrative descriptions of courses could still be used, but terminal performance objectives could be added to make such monographs even more meaningful.

18. It is obvious that some central agency will have to begin training people in these new techniques and procedures.

19. The use of DACUM and a computer-managed data base does not limit the variety of delivery and evaluation systems possible. There must of course be some common forms and procedures, but the HOW and HOW WELL aspects of instruction can differ from place to place.

20. A DACUM EXCHANGE (dubbed DEX by the author) is now a real possibility through the Ontario College Bibliocentre.

These 20 points represent only a few of the real or speculative considerations for the application of DACUM in Retraining and Post-Secondary curriculum development.

EPILOGUE - PART A

DACUM, CCDO and all that

BY

G. H. WRIGHT

For those seeking some guidance on the how, what and why of DACUM (Developing a curriculum, or Designing a curriculum) a recent publication by Bill Sinnett will prove a very useful handbook.

> Application of Dacum in retraining and post-secondary curriculum developed by William E. Sinnett, Randa Division, Humber College of Applied Arts and Technology, 56 Queen Elizabeth Blvd., Toronto, Ontario, M8Z 1M1.

This guide is timely and necessary, for even in Ontario various adaptations and uses of the process to analyze occupations and disciplines is occurring. Whilst, in an emerging technique there is advantage in individual endeavour, the growing application and diversity in utility indicates that those involved need to co-operate more fully. If we seek to supply a mobile labour force, then there must be commonly acceptable standards of achievement and performance. Bill Sinnett, concerned with this philosophy, offers some ideas to those who are examining or applying DACUM.

To provide the reader with perspective for projecting and predicting Dacum evolvement, part one provides a review of current literature on 'front-end analysis'. If you are not sure of the meaning of 'front-end analysis', I can at least say that in this context it apparently has no connection with aviation, automobiles or pornography!

The commentary on Dacum as it is being implemented, and the suggestions on procedures to adopt in establishing a Dacum chart, provide useful advice for those seeking guidance.

Included in the work is a synopsis of 103 Dacum Charts (see list) classified under subject, level and title. The synopsis provides a list of each of the terminal performance objectives. The original charts are lodged at the College Bibliocentre. It is hoped that anyone producing a Dacum Chart in future will send it to the College Bibliocentre for general distribution. The possibility that such data can be input into a computer to facilitate updating and retrieving performance objectives, forms one of the twenty points listed for the application of Dacum.

There is a need to re-examine the coding, both in relation to the present use of CCDO and the matrix for Dacum. The CCDO should be applied in such a way that it does succeed in identifying specific College programs and their levels within occupational and academic clusters. The following breakdown may be helpful in this regard.

College Bibliocentre Newsletter No. 13 - Sept. 1974

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1. The 'CCDO' Code when applied should distinguish the following elements of information.

   a. occupational classification;
   b. identify specific job subdivision within classification;
   c. indicate type of course;
   d. length of course;
   e. identify College/Campus.

The recommended codes for this purpose are defined as follows:

a. occupational classification

CCDO Number comprises 4 digits - the first two defining a major division and the next two digits a minor subdivision of occupations

and 3 digits used consecutively to define specific occupational units within the major divisions

thus, to code Industrial Instrumentation Technician
2165 signifies Architectural and Engineering Technologists and Technicians

299 signifies other Engineering Technicians e.g. there is no specific occupational description for an Industrial Instrumentation Technician

The CCDO Number then for Industrial Instrumentation Technician = 2165.299.

b. specific job subdivision

There are a number of instances in CCDO where the original number is insufficient to indicate a College Course with specificity. A 2-digit code should be used for this purpose as a consecutive number to identify uniquely the occupation.

Thus, to specify Industrial Instrumentation Technician from all 'Other Engineering Technicians' the code would read

2165.299.01

This number to be assigned by the College Bibliocentre.

c. type of training

To differentiate the type of training for Industrial Instrumentation Technician, there may be need to consider College Diploma course from In-House Training: from Refresher courses etc. and to distinguish personalized learning programs from standard lecture orientated programs.

A College Diploma Course for an Industrial Instrumentation Technician in a standard lecture program would be

2165.299.01	as

d. length of course

A two-digit code would signify the number of days in weeks for the course. Thus, the average 2 year diploma course would be 66 weeks, a three year program 99.

The Industrial Instrumentation Technician Diploma Course would now read:

2165.299.01	as	66

e. course language code

A 3-digit code which identifies language of program.

Fre = French
Eng = English

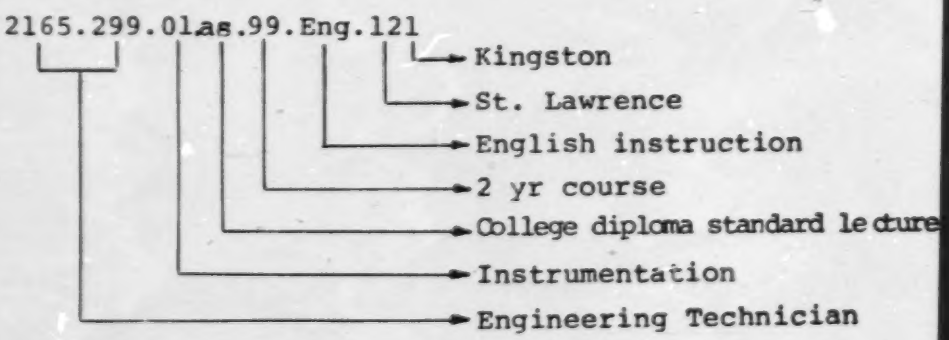
Thus, a two year program for Industrial Instrumentation Technician Diploma instructed in English, would read

2165.299.01	as	66	Eng

f. College/Campus identity

A 3-digit code which identifies the College offering the course.

Thus, an Industrial Instrumentation Technician Diploma Course instructed in English at St. Lawrence, Kingston Campus, would read



Codes attached

a. CCDO. (already distributed - available in CB Catalogue Code Manual.)

b. Type of training offered by the program

Code 1st digit

a. University or College diploma or certificated program - (post secondary);
b. vocational training - (retraining):
c. apprenticeship;
d. in-plant training;
e. on the job training;
f. pre-employment - (programs leading to academic upgrading or credit towards apprenticeship);
g. refresher;
h. professional development - (includes management development program);
j. extension programs - (non-career orientated, emphasis on profitable leisure).

Code 2nd digit

s. standard lecture program;
p. personalized instruction.

c. Length of Course in college duration.

Code

00 up to 6 days
01 7-13 days
02 14-20 days etc.

d. College/Campus Codes.

11-1	ALGONQUIN	Woodroffe Campus, Ottawa.
11-3	"	Rideau Campus, Ottawa.
11-4	"	Upper Ottawa Valley Campus, Pembroke.
12-1	ST. LAWRENCE	Kingston Campus, Kingston.
12-2	"	Cornwall Campus, Cornwall.
12-3	"	Brockville Campus, Brockville.
13-1	SIR SANDFORD FLEMING	Main Campus, Peterborough.
13-2	"	Russell Street East, Lindsay.
13-3	"	Brealey Campus, Peterborough.
13-4	"	Cobourg Campus, Cobourg.
13-6	LOYALIST	Main Campus, Belleville.
14-1	DURHAM	Main Campus, Oshawa.
15-1	CENTENNIAL	Warden Avenue, Scarborough.
15-2	"	Ashtonbee Campus, Scarborough.
16-1	HUMBER	Main Campus, Rexdale.
17-1	SENECA	Sheppard Campus, Willowdale.
17-2	"	Main Campus, Willowdale.
17-3	"	King Campus, King City

18-1	SHERIDAN	Brampton Campus, Brampton.
18-2	"	Main Campus, Oakville.
18-3	"	Lorne Park Campus, Port Credit.
18-4	"	Central Library, Oakville.
18-8	"	Applied Arts Library, Main Campus, Oakville.
19-1	MOHAWK	Main Campus, Hamilton.
19-3	"	Braneida Campus, Brantford.
19-5	"	Saltfleet Campus, Stoney Creek.
20-1	NIAGARA	Main Campus, Welland.
20-2	"	Adult Learning Centre, St. Catherines.
21-1	FANSHAWE	Main Campus, London.
21-2	"	Woodstock Agricultural Div., Woodstock.
21-3	"	Simcoe Agricultural Div., London.
21-4	"	Adult Education Centre, London.
21-5	"	St. Thomas Adult Education Centre, London
22-1	ST. CLAIR	Main Campus, Windsor.
23-1	LAMBTON	Main Campus, Sarnia.
24-1	CONESTOGA	Main Campus, Kitchener.
24-2	"	Kitchener-Waterloo Continuing Ed. Centre, Waterloo.
24-3	"	Guelph Campus, Guelph.
25-1	GEORGIAN	Main Campus, Barrie.
25-2	"	Orillia Campus, The Armouries, Orillia.
25-3	"	Owen Sound Campus, Owen Sound.
26-1	CAMBRIAN	Main Campus, Sudbury.
27-1	NORTHERN	Main Campus, South Porcupine.
27-2	"	Kirkland Lake Campus, Kirkland Lake.
27-3	"	Haileybury Campus, Haileybury.
27-4	"	Retraining Division, Timmins.
28-1	CONFEDERATION	Main Campus, Thunder Bay.
28-2	"	Kenora Campus, Kenora.
28-3	"	Dryden Public Library, Dryden.
28-4	"	Audio Visual Department, Thunder Bay.
29-1	GEORGE BROWN	Kensington Campus, Toronto.
29-2	"	Casa Loma Campus, Toronto.
29-3	"	Terauley Campus, Toronto.
29-4	"	College Street Campus, Toronto.
29-5	"	MacPherson Campus, Toronto.
29-6	"	Keele Street Campus, Toronto.
30-1	RYERSON POLYTECHNICAL INSTITUTE	Main Campus, Toronto.
31-1	CANADORE	North Bay Campus, North Bay.
31-2	"	Audio Visual Dept., North Bay.
32-1	SAULT COLLEGE	Sault Ste. Marie Campus, Sault Ste. Marie

Other imaginary examples

1. Industrial Maintenance Mechanic, 6 week program, in-plant, lectures offered at Sheridan, Brampton Campus, with instruction in English.

major and minor divisions

87 - Construction trades occupation
8799 - " " " other occupations

unit subdivision

8799.126 - Maintenance man, factory or mill.
[Note: this occupation indicates 2-4 yrs training and General Educational Development level of 4.]

In this case job description is sufficient, so no further subdivision is required. Thus, actual code number becomes

8799.126.00

type of course

8799.126.00.ds. Industrial Maintenance Mechanic in-plant training, lecture orientated

duration of course

8799.126.00.ds.06 Industrial Maintenance Mechanic in-plant training, lecture orientated for 6 weeks

language

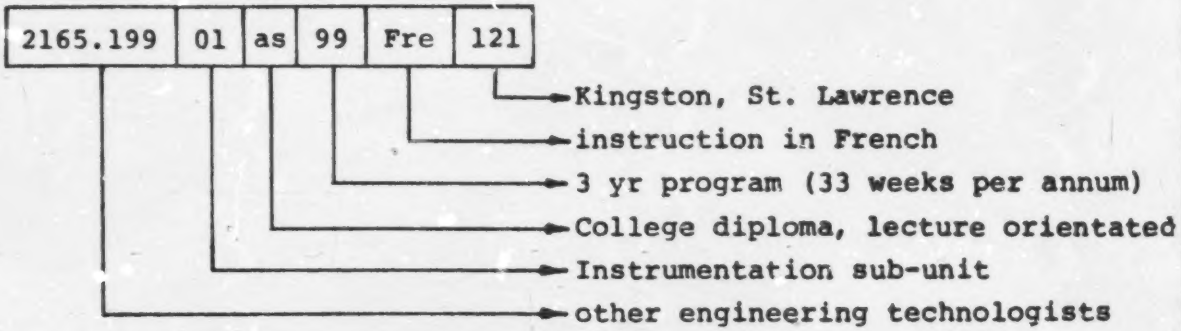
8799.126.00.ds.06.Eng. Industrial Maintenance Mechanic in-plant training, lecture orientated for 6 weeks with instruction in English

place

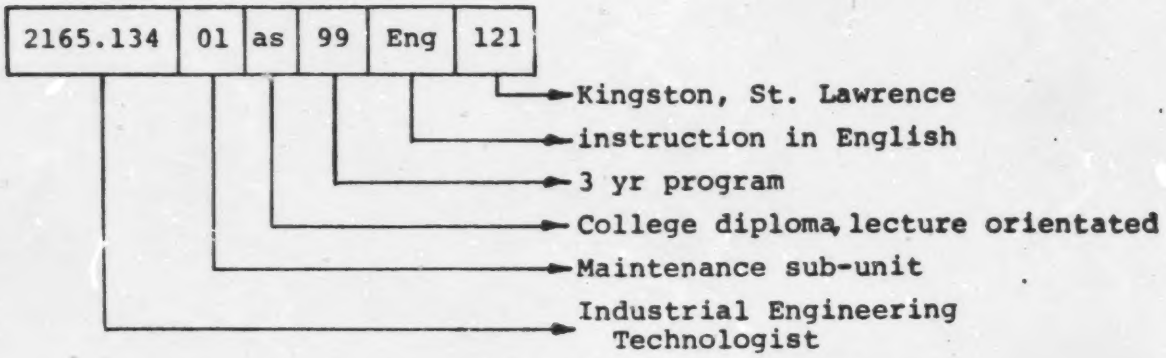
8799.126	00	ds	06	Eng	181

Industrial Maintenance Mechanic in-plant training, lecture orientated, for 6 weeks with instruction in English at Brampton Campus, Sheridan.

2. Industrial Instrumentation Technology, 3 yr program at Kingston, St. Lawrence with instruction in French, lecture orientated.



3. Industrial Engineering Technology (Maintenance), 3 yr program at Kingston, St. Lawrence, with instruction in English, lecture orientated.



EPILOGUE - PART B

Comments on the first edition made by Robert F. Adams - author of the original DACUM document - DACUM Approach to Curriculum Learning and Evaluation in Occupational Training - Nova Scotia New Start, March 1974.

These comments have been summarized from an audio-tape made by Mr. Adams.

-The subheading 'Terminal Performance Objective' (TPO) which appears on each summary card in Part IV may be misleading - the term 'General Areas of Competence' may be more accurate. The definitions in each block on the chart are actually TPO's.

-Adams agrees with the 3 classifications of charts, i.e.:

a) the charting of courses as originally started by Dr. Rice, Howard Clemens and Mr. Franklin.

b) the Nova Scotia New Start model for skill profile building and the use of rating scales.

c) offshoots of these two techniques

He suggests that there is perhaps too much flexibility within the approaches and that ultimately it is primarily industry and commerce which should determine the chart rather than a single developer.

-Within the Nova Scotia model there is no need or requirement for the use of modules as developed by the Ontario Manpower Training Branch or for the banking of objectives. The uniqueness of each chart precludes these uses and processes.

Author's Comment - This statement applies if the entire Nova Scotia model is being used - the whole idea of DACUM is evolving and new applications are being tried - perhaps there is room for Modules - banking of generic skills and the futher development of these skills by DACUM-like committees and groups.

-most curriculum activities in the experience of this author are compromises of some sort which can lead to new innovations and to getting the job done.

-Adams points out that DACUM as he uses it involves all of the processes of analysis, charting, program planning, rating, resource selection, sequencing and a learning posture - if the word DACUM implies all of these activities then the flow charts on pages 9 and 10 of the Introduction should indicate which processes or functions are implied - perhaps the term DACUM ANALYSIS would fit in better.

-He disagrees with the approach which calls for operationalizing the chart in a second step. If the committee meets for 3 (rather than 2) days, the level of detail should be such that further objectives need not be extruded. The built in rating scale provides sufficient flexibility to instructors in that it provides the performance objectives of the course.

Author's Comment - What was intended in this paper was a description of what is actually happening - the steps and procedures as outlined are not intended to be prescriptive.
However - Bob Adam's point is well taken.

As a follow-up to the comments on implementing the chart, he has outlined a very interesting technique. It involves the use of a Program Development Grid.

Essentially, a 1 or 2 day workshop is held with trainers, instructors, job experts and a coordinator. Large sheets are put up around the room - the skills are listed across the top and in columns under each skill the team contributes development information.

The following list is suggested by Mr. Adams:

learning activities	human resources
location	selected printed materials
occupational equipment	printed material to be developed
occupational tools	selected A.V. materials
occupational supplies	A.V. materials to be developed
	learning equipment

This information is then used by the developer(s) to operationalize the course.

-In Part III, regarding the actual steps in the analysis and charting process, it is suggested that a review of the occupation may have a narrowing rather than a broadening influence on the committee. Perhaps it would be better to expand the notion of the job then narrow it down.

In attempting the first band of skills, rather than starting with something simple like hand tools, it may be better to choose a General Area of Competence which is at the core of the occupation - this serves as a training and familiarization exercise for the committee.

When a band appears to be finished - an extra 15 minutes pushing for more skills often stimulates additional definitions which are significant.

-In Adam's experience many cards are dropped in the course of the analysis - the committee should be encouraged to define as wide a range of skills as possible and then to select and sort these through further discussion.

-He does not permit the committee to weigh skills - this is taken care of by the rating scale which is understood - individual firms in business and industry can quickly do a rating on a chart to indicate their emphasis for training purposes.

-He does not combine charts when a firm asks for training in more than one area - a man can work on more than one chart at a time without difficulty.

With respect to the Disadvantages listed on page 1 of Part 5:

1) he agrees.
2) this is not a disadvantage if the chart is to be used locally.
3) this only true if the coordinator permits it.
4) he disagrees as pointed out previously - if the analysis is extensive enough in the first place it should not be necessary to write additional objectives.
5) he does not see this as a disadvantage.
6) he often asks instructors who are hesitant about the use of charts to do a rating and finds that they begin to see the value of the chart.
7) he agrees that DACUM is not intended for non-competency courses - it was designed specifically for vocational and occupational training.

Author's Comment -

Bob Adam's address is:

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Canada

It would serve no real purpose in terms of this document to promote 'THE GREAT DEBATE' on the relative merits and fine points of the various uses and understandings of DACUM.

What is of interest is the growing refinement and unfolding of processes that are meeting the needs of contemporary curriculum developers. The growing collection and use of DACUM charts for purposes of communication and the interchange of information with respect to standards will hopefully assist educators, trainers and developers to meet their goals.

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3600 Willingdun Avenue,
Burnaby, British Columbia.

Mr. Glen Tippett,
Training Research and
Development Station,
Department of Manpower
and Immigration,
Box 1565,
Prince Albert, Sask. S6V 5T2

APPENDIX "A":

(1) Example of Chart produced by method in Part III (author's technique as used in Ontario).

(2) Example of British Columbia Chart.

(3) Example of Nova Scotia Newstart Corp. Chart.

(4) Blank Chart.

APPENDIX "B": Task Certification Record for Biomedical Equipment Technician (Entry Level).

APPENDIX "C": Learning-Evaluation Model for Trainee using DACUM Process - Nova Scotia Newstart Corp.

APPENDIX "D": STEP Learning Process - Holland College, Prince Edward Island.

APPENDIX "E": Diagram of furniture arrangement for DACUM session.

STUDENT PROGRAM CHART

INTERMEDIATE PERFORMANCE OBJECTIVES

		Operate cut-off saws 001.001		Operate a drill press 001.002
Select & use: calipers(Vernier) micrometers, protractors, dial gauges 003.001	Select & use marking & scribing tools 003.002	Select & use gauges, thread, jo block, gap, depth height, torque 003.003	Select & use flatness testor profile projector 003.004	Use hardness testors 003.005
	Solve problems in basic Algebra and Trigonometry 004.001		Apply basic mathematical formulas 004.002	Make calculations related to: force flow, pressure, speed 004.003
			Inspect incoming components 005.001	Sequence the steps of assembly 005.002
		Examine instrument and determine problem 006.001	Report findings for approval 006.002	Disassemble mechanical, optical, elec. instruments 006.003
Interpret symbols conventions, abbreviations used in drawings 007.001		Relate symbols to proper field of technology 007.002	Read mechanical schematics 007.003	

STUDENT PROGRAM CHART

INTERMEDIATE PERFORMANCE OBJECTIVES

Select and sharpen machine cutting tools 001.003	Operate a tool maker's lathe 001.004	Operate a milling machine: vertical and horizontal 001.005	Operate a 2 & 3 dimensional pantograph 001.006	Operate Jewellers lathe 001.007
	Select and use Vices 002.001	Select and use Files 002.002	Select & use cutting tools, cutoffs, diamon,, hacksaws 002.003	Select & use: screwdrivers, wrenches, torque wrenches 002.004
	Use Arbour Presses 002.008	Select and use soft and hard soldering eqmt. 002.009	Select and use power-hand tools 002.010	Select and use polishing stone, compounds 002.011
Select & use timing devices eg. stop watch, electrical counters, profile recorder 003.006	Use a tachometer 003.007	Select & use collimaters, centering devices, tool maker's microscope 003.008	Use temperature and pressure gauges 003.009	Select & use electrical meters, voltmeter ohmmeter ammeter, multimeter 003.010
			Interpret current standards & codes 004.004	Research technical data required 004.005
Use specified test equipment 005.003	Fabricate special jigs & testing apparatus 005.004	Check subassemblies against special codes eg. Fed. CSA Military 005.005	Test function & or accuracy of sub-assemblies 005.006	Isolate faults 005.007
Inspect, clean, repair or replace parts, mechanical optical, optical, elec. instruments 006.004	Reassemble mechanical, optical, electrical instruments 006.005	Use appropriate lubricants 006.006	Calibrate & test mechanical, optical, electrical instruments 006.007	Maintain Calibration Chart 006.008
			Read wiring diagrams 007.004	Read electrical & electronic schematics 007.005
	Identify & select metals, ferrous, non-ferrous 008.001	Identify & select plastics, rubber, insulating material 008.002	Select and use adhesives 008.003	Select and use lubricants 008.004
Adapt technical terminology 009.001	Write memos 009.002	Write technical reports and service records 009.003	File and classify technical data 009.004	Use microfilm systems 009.005

STUDENT PROGRAM CHART

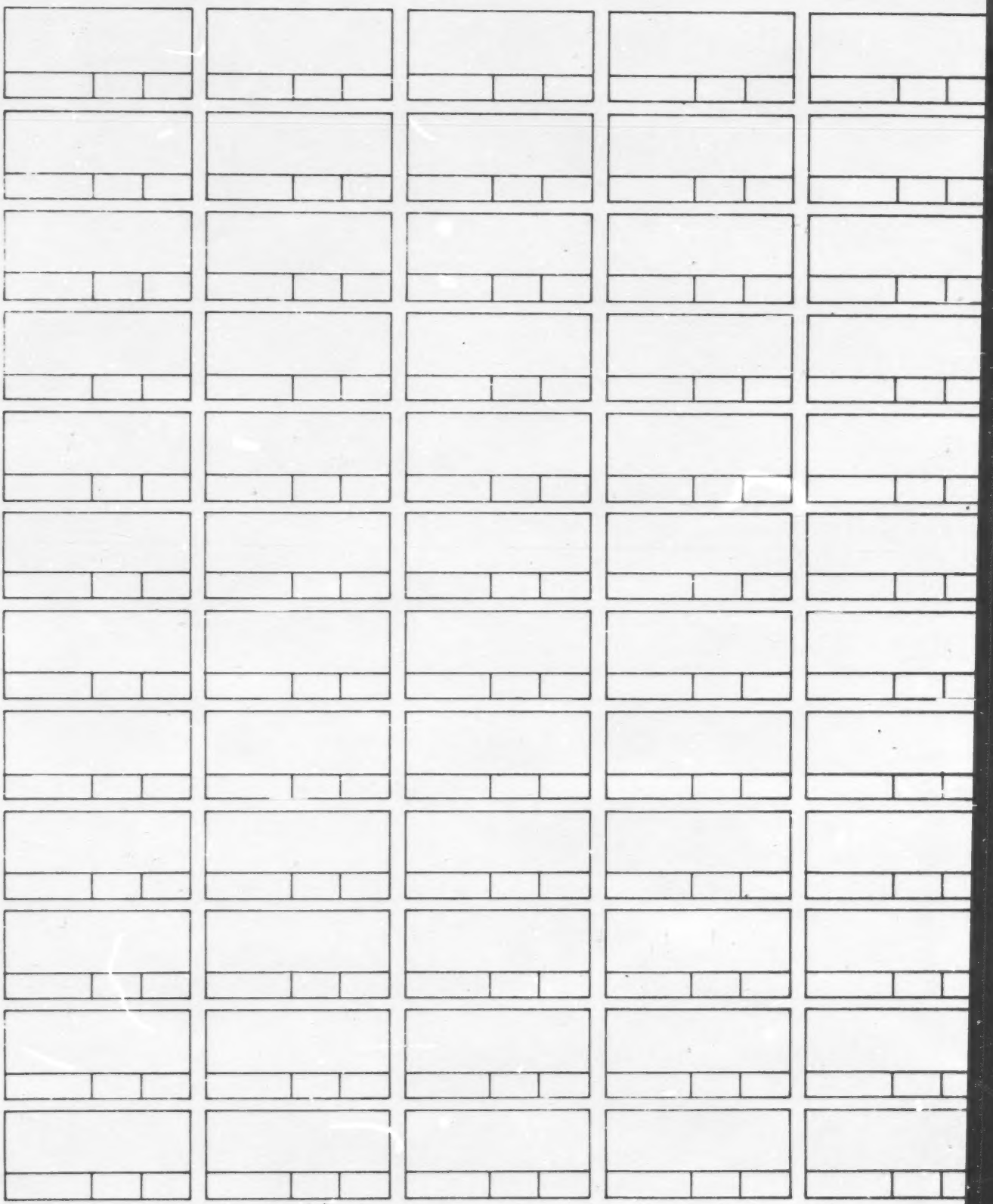
INTERMEDIATE PERFORMANCE OBJECTIVES			TERMINAL PERFORMANCE OBJECTIVES
Draw simple sketches of required parts 001.008	Design simple jigs and fixtures 001.009		OPERATE AND MAINTAIN MACHINE TOOLS 001
Select & use: taps, dies, drills, reamers 002.005	Select and use pliers & tweezers 002.006	Select and use fasteners 002.007	SELECT, USE AND MAINTAIN HAND TOOLS 002
Apply lapping techniques 002.012	Apply heat treatment tech. to metals, tempering, hard., annealing 002.013	Select, use and make special tools & parts 002.014	
Select and use chart recorders 003.011	Select & use oscilloscopes, signal generators, pulse generator 003.012	Select & use dialectric strength meters, insulation resist. testers 003.013	USE MEASURING EQUIPMENT 003 MECHANICAL OPTICAL ELECTRICAL
Draw simple sketches using drafting principles 004.006	Estimate time & material for design & advantages of design 004.007		DESIGN ASSEMBLY AND TESTING DEVICES 004
Apply appropriate finishing techniques 005.008	Do final check to verify instrument function 005.009	Inspect final pr product for consumer acceptability 005.010	ASSEMBLE INSTRUMENTS 005 MECHANICAL OPTICAL ELECTRICAL
Order spare parts to maintain stock 006.009	Follow a maintenance program 006.010	Recommend changes in maintenance according to conditions 006.011	REPAIR, ADJUST AND MAINTAIN INSTRUMENTS 006
			READ AND INTERPRET BLUEPRINTS AND SCHEMATICS 007
Identify, select & apply material coatings: paint, powder, anhodizing 008.005	Identify electronic components 008.006	Identify & select electrical components and wire 008.007	IDENTIFY AND SELECT MATERIALS AND COMPONENTS 008
	Instruct technicians, operators users in use of equipment 009.006	Practice human relations skills & bus. ethics 009.007	COMMUNICATE EFFECTIVELY 009

STUDENT PROGRAM CHART

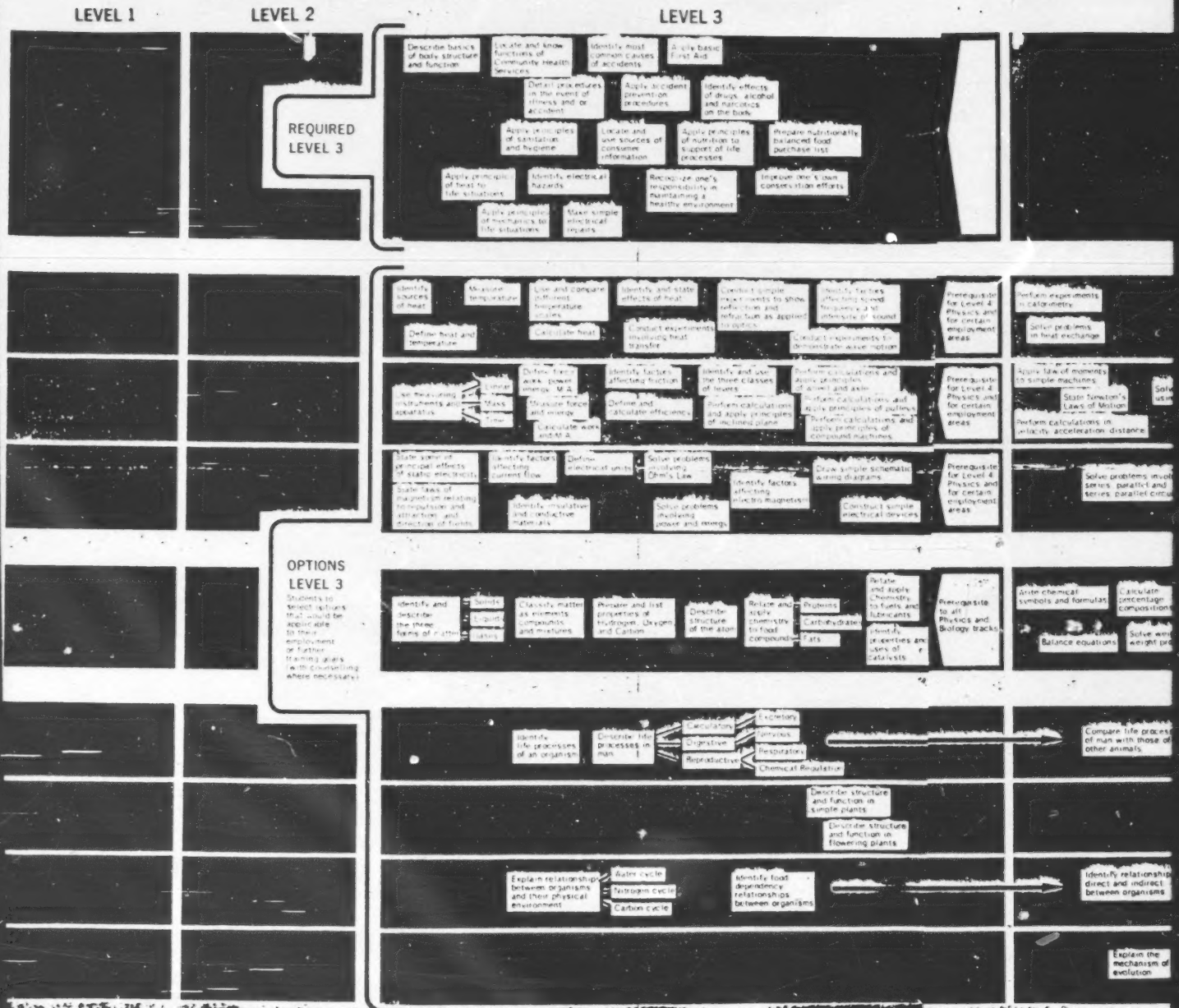
INTERMEDIATE PERFORMANCE OBJECTIVES			TERMINAL PERFORMANCE OBJECTIVES

STUDENT PROGRAM CHART

INTERMEDIATE PERFORMANCE OBJECTIVES



BASIC TRAINING FOR SKILL DEVELOPMENT
SCIENCE CURRICULUM CHART


LEVEL 1
LEVEL 2
LEVEL 3
REQUIRED LEVEL 3
Describe basics of body structure and function
Locate and know functions of Community Health Services
Identify most common causes of accidents
Apply basic First Aid
Detail procedures in the event of illness and or accident
Apply accident prevention procedures
Identify effects of drugs, alcohol and narcotics on the body
Apply principles of sanitation and hygiene
Locate and use sources of consumer information
Apply principles of nutrition to support of life processes
Prepare nutritionally balanced food purchase list
Apply principles of heat to life situations
Identify electrical hazards
Recognize one's responsibility in maintaining a healthy environment
Improve one's own conservation efforts
Apply principles of mechanics to life situations
Make simple electrical repairs
OPTIONS LEVEL 3
Students to select options that would be applicable to their employment or further training plans (with counselling where necessary)
Identify sources of heat
Measure temperature
Use and compare different temperature scales
Identify and state effects of heat
Define heat and temperature
Calculate heat
Conduct experiments involving heat transfer
Conduct experiments for demonstrate wave motion
Prerequisite for Level 4 Physics and for certain employment areas
Perform experiments in calorimetry
Solve problems in heat exchange
Define force, work, power, energy, M.A.
Identify factors affecting friction
Identify and use the three classes of levers
Perform calculations and apply principles of pulleys and axle
Perform calculations and apply principles of inclined plane
Perform calculations and apply principles of compound machines
Prerequisite for Level 4 Physics and for certain employment areas
Apply law of moments to simple machines
State Newton's Laws of Motion
Perform calculations in velocity, acceleration, distance
Use measuring instruments and apparatus
Linear
Mass
Time
Measure force and energy
Calculate work and P
Define and calculate efficiency
Perform calculations and apply principles of inclined plane
State some of principal effects of static electricity
Identify factors affecting current flow
Define electrical units
Solve problems involving Ohm's Law
Draw simple schematic wiring diagrams
Prerequisite for Level 4 Physics and for certain employment areas
Solve problems involving series, parallel and series parallel circuits
State laws of magnetism relating to repulsion and attraction and direction of fields
Identify insulative and conductive materials
Solve problems involving power and energy
Identify factors affecting electromagnetism
Construct simple electrical devices
Identify and describe the three forms of matter
Solids
Liquids
Gases
Classify matter as elements, compounds and mixtures
Prepare and list properties of Hydrogen, Oxygen and Carbon
Describe structure of the atom
Relate and apply chemistry to food compounds
Proteins
Carbohydrates
Fats
Relate and apply Chemistry to fuels and lubricants
Identify properties and uses of catalysts
Prerequisite to all Physics and Biology tracks
Write chemical symbols and formulas
Calculate percentage compositions
Balance equations
Solve weight problems
Identify life processes of an organism
Describe life processes in man
Excretion
Circulation
Digestion
Respiration
Reproduction
Chemical Regulation
Compare life processes of man with those of other animals
Describe structure and function in simple plants
Describe structure and function in flowering plants
Explain relationships between organisms and their physical environment
Water cycle
Nitrogen cycle
Carbon cycle
Identify food dependency relationships between organisms
Identify relationships direct and indirect between organisms
Explain the mechanism of evolution
DEFINE AND APPLY SCIENTIFIC METHOD (INTEGRATED, THROUG

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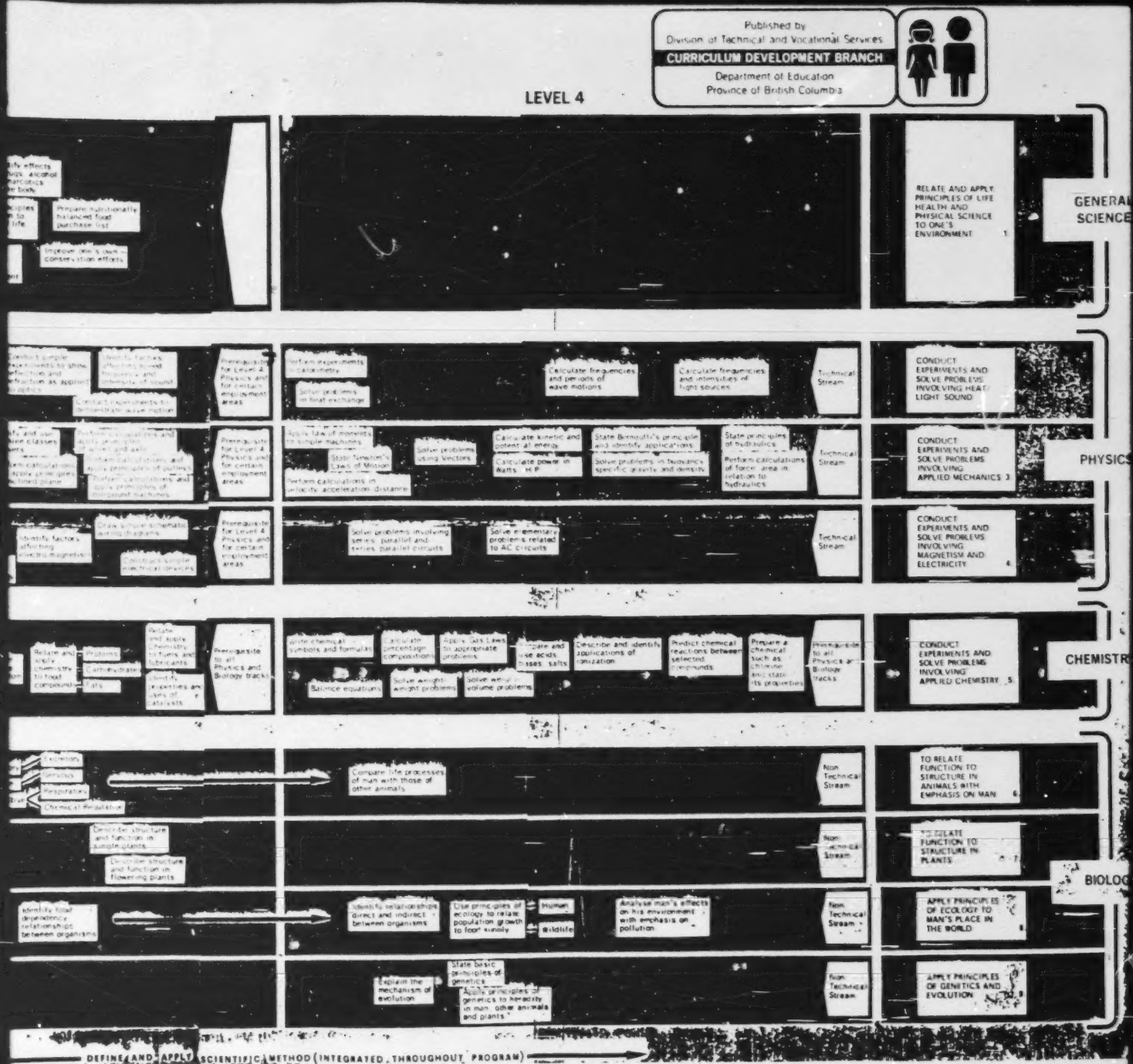
Division of Technical and Vocational Services
CURRICULUM DEVELOPMENT BRANCH
Department of Education
Province of British Columbia


LEVEL 4
Prepare nutritionally balanced food purchase list
Improve one's own conservation efforts
RELATE AND APPLY PRINCIPLES OF LIFE HEALTH AND PHYSICAL SCIENCE TO ONE'S ENVIRONMENT 1
GENERAL SCIENCE
Prerequisite for Level 4 Physics and for certain employment areas
Perform experiments in calorimetry
Solve problems in heat exchange
Calculate frequencies and periods of wave motions
Calculate frequencies and intensities of light sources
Technical Stream
CONDUCT EXPERIMENTS AND SOLVE PROBLEMS INVOLVING HEAT/ LIGHT/ SOUND
Prerequisite for Level 4 Physics and for certain employment areas
Solve problems using vectors
Calculate kinetic and potential energy
Calculate power in Watts H.P.
State Bernoulli's principle and identify applications
Solve problems in buoyancy, specific gravity and density
State principles of hydraulics
Perform calculations of force, area in relation to hydraulics
Technical Stream
CONDUCT EXPERIMENTS AND SOLVE PROBLEMS INVOLVING APPLIED MECHANICS 3
PHYSICS
Prerequisite for Level 4 Physics and for certain employment areas
Solve problems involving series, parallel and series parallel circuits
Solve elementary problems related to AC circuits
Technical Stream
CONDUCT EXPERIMENTS AND SOLVE PROBLEMS INVOLVING MAGNETISM AND ELECTRICITY 4
Prerequisite to all Physics and Biology tracks
Write chemical symbols and formulas
Calculate percentage compositions
Apply Gas Laws to appropriate problems
Prepare and use acids, bases, salts
Describe and identify applications of ionization
Predict chemical reactions between selected compounds
Prepare a chemical such as chlorine and state its properties
Prerequisite to all Physics or Biology tracks
Balance equations
Solve weight-weight problems
Solve weight-volume problems
CONDUCT EXPERIMENTS AND SOLVE PROBLEMS INVOLVING APPLIED CHEMISTRY 5
CHEMISTRY
Compare life processes of man with those of other animals
Non Technical Stream
TO RELATE FUNCTION TO STRUCTURE IN ANIMALS WITH EMPHASIS ON MAN 6
Non Technical Stream
TO RELATE FUNCTION TO STRUCTURE IN PLANTS 7
BIOLOGY
Identify food dependence relationships between organisms
Identify relationships direct and indirect between organisms
Use principles of ecology to relate population growth to food supply
Human
Wildlife
Analyse man's effects on his environment with emphasis on pollution
Non Technical Stream
APPLY PRINCIPLES OF ECOLOGY TO MAN'S PLACE IN THE WORLD 8
Explain the mechanism of evolution
State basic principles of genetics
Apply principles of genetics to heredity in man, other animals and plants
Non Technical Stream
APPLY PRINCIPLES OF GENETICS AND EVOLUTION 9
DEFINE AND APPLY SCIENTIFIC METHOD (INTEGRATED THROUGHOUT PROGRAM)

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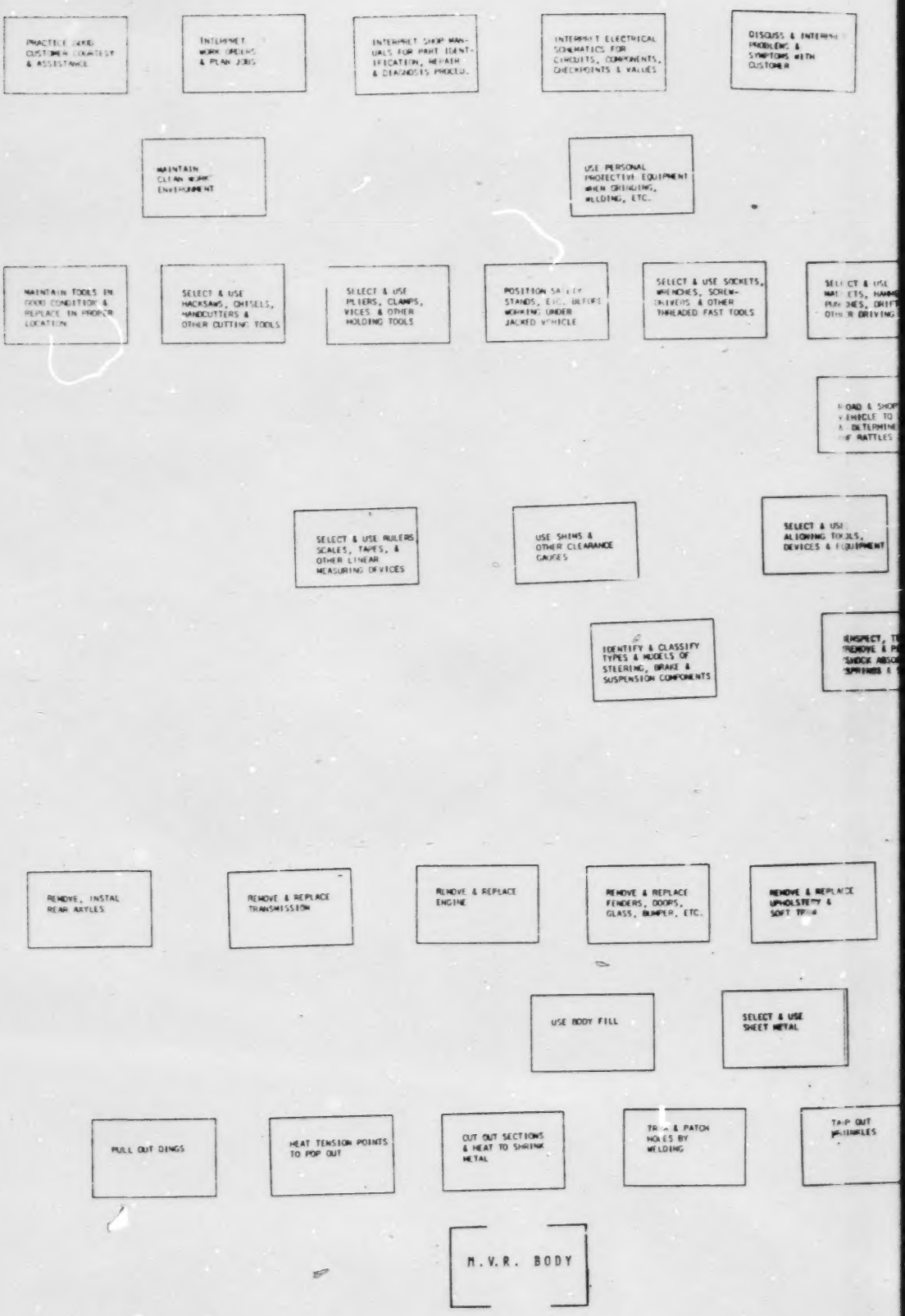
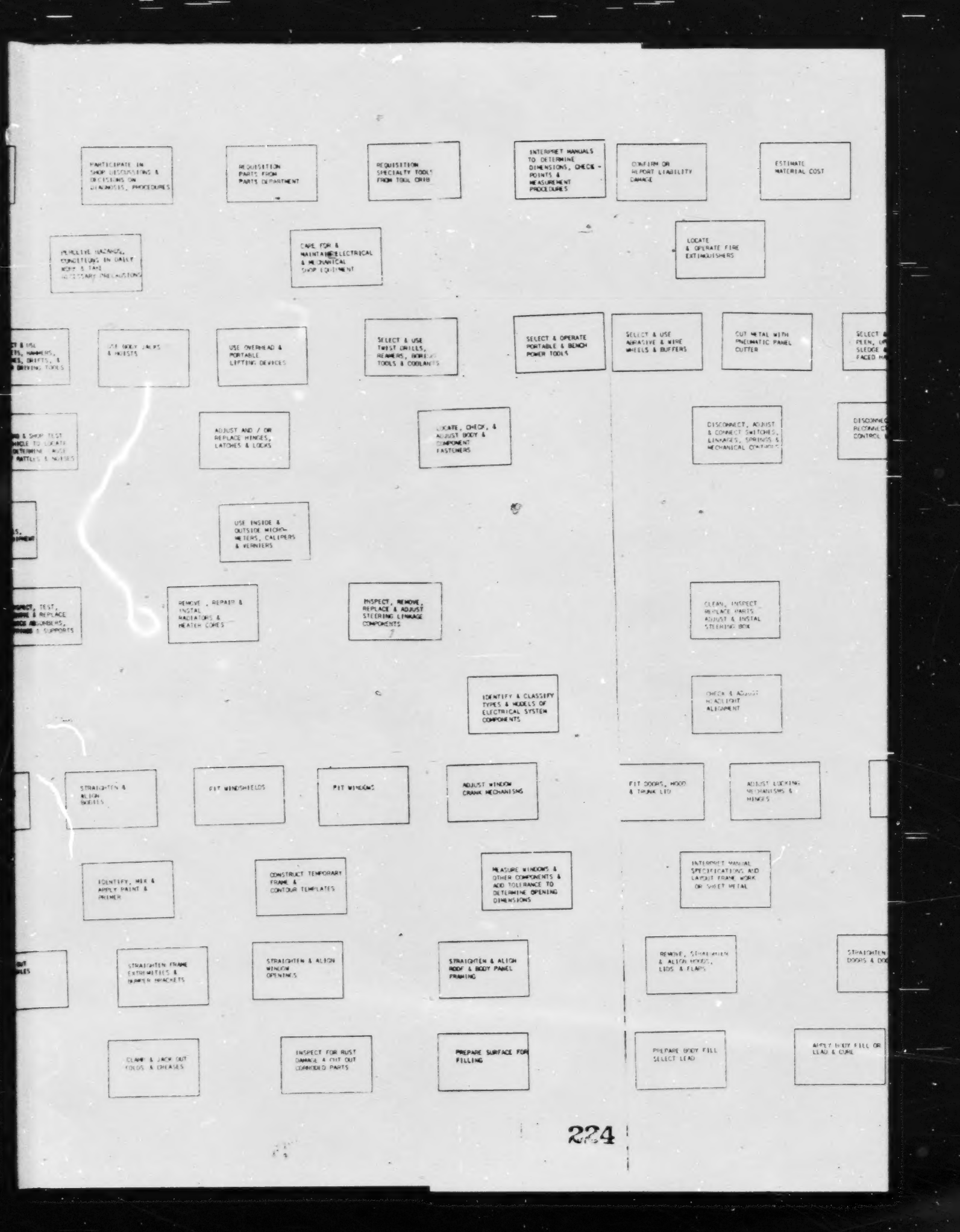
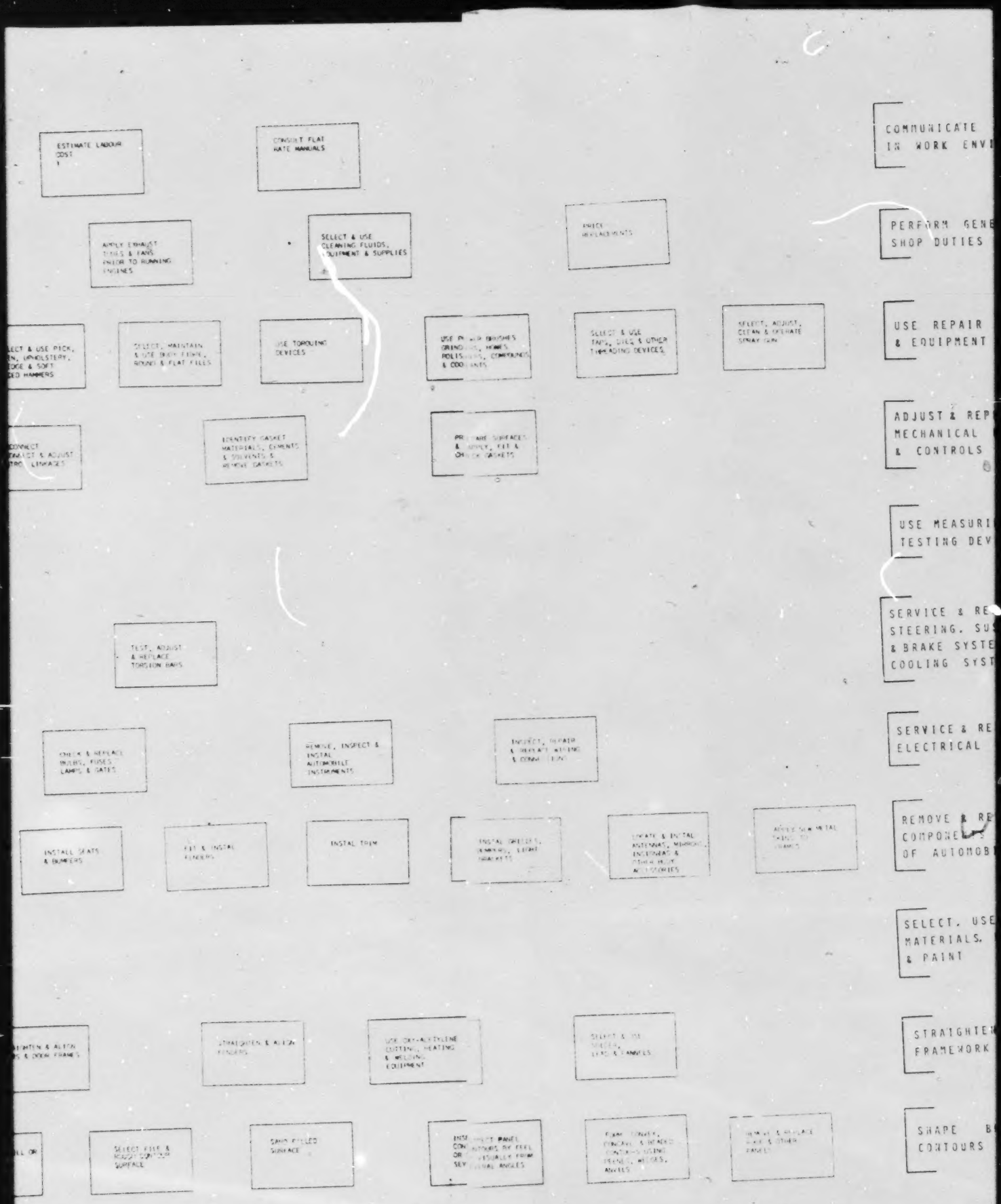

PRACTICE SAFE CUSTOMER COURTESY & ASSISTANCE
INTERPRET WORK ORDERS & PLAN JOBS
INTERPRET SHOP MANUALS FOR PART IDENTIFICATION, REPAIR & DIAGNOSIS PROCED.
INTERPRET ELECTRICAL SCHEMATICS FOR CIRCUITS, COMPONENTS, CHECKPOINTS & VALUES
DISCUSS & INTERPRET PROBLEMS & SYMPTOMS WITH CUSTOMER
MAINTAIN CLEAN WORK ENVIRONMENT
USE PERSONAL PROTECTIVE EQUIPMENT WHEN GRINDING, WELDING, ETC.
MAINTAIN TOOLS IN GOOD CONDITION & REPLACE IN PROPER LOCATION
SELECT & USE HACKSAWS, CHISELS, HANDCUTTERS & OTHER CUTTING TOOLS
SELECT & USE PLIERS, CLAMPS, VICES & OTHER HOLDING TOOLS
POSITION SAFETY STANDS, ETC. BEFORE WORKING UNDER JACKED VEHICLE
SELECT & USE SOCKETS, WRENCHES, SCREWDRIVERS & OTHER THREADED FAST TOOLS
SELECT & USE
ROAD & SHOP
VEHICLE TO
& DETERMINE
OF RATTLES
SELECT & USE RULERS, SCALES, TAPES, & OTHER LINEAR MEASURING DEVICES
USE SHIMS & OTHER CLEARANCE GAUGES
SELECT & USE ALIGNING TOOLS, DEVICES & EQUIPMENT
IDENTIFY & CLASSIFY TYPES & MODELS OF STEERING, BRAKE & SUSPENSION COMPONENTS
INSPECT, T
REMOVE & P
SHOCK ABSO
SPRINGS &
REMOVE, INSTAL REAR AXLES
REMOVE & REPLACE TRANSMISSION
REMOVE & REPLACE ENGINE
REMOVE & REPLACE FENDERS, DOORS, GLASS, BUMPER, ETC.
REMOVE & REPLACE UPHOLSTERY & SOFT TRIM
USE BODY FILL
SELECT & USE SHEET METAL
PULL OUT DINGS
HEAT TENSION POINTS TO POP OUT
CUT OUT SECTIONS & HEAT TO SHRINK METAL
TRIM & PATCH HOLES BY WELDING
TAP OUT WRINKLES
M.V.R. BODY


PARTICIPATE IN SHOP DISCUSSIONS & DECISIONS ON DIAGNOSIS, PROCEDURES
REQUISITION PARTS FROM PARTS DEPARTMENT
REQUISITION SPECIALTY TOOLS FROM TOOL CRIB
INTERPRET MANUALS TO DETERMINE DIMENSIONS, CHECK-POINTS & MEASUREMENT PROCEDURES
CONFIRM OR REPORT LIABILITY DAMAGE
ESTIMATE MATERIAL COST
PERCEIVE HAZARDS, CONCENTRATE IN DAILY WORK & TAKE NECESSARY PRECAUTIONS
CARE FOR & MAINTAIN ELECTRICAL & MECHANICAL SHOP EQUIPMENT
LOCATE & OPERATE FIRE EXTINGUISHERS
USE BODY JACKS & HOISTS
USE OVERHEAD & PORTABLE LIFTING DEVICES
SELECT & USE TWIST DRILLS, REAMERS, BORING TOOLS & COOLANTS
SELECT & OPERATE PORTABLE & BENCH POWER TOOLS
SELECT & USE ABRASIVE & WIRE WHEELS & BUFFERS
CUT METAL WITH PNEUMATIC PANEL CUTTER
ADJUST AND / OR REPLACE HINGES, LATCHES & LOCKS
LOCATE, CHECK, & ADJUST BODY & COMPONENT FASTENERS
DISCONNECT, ADJUST & CONNECT SWITCHES, LINKAGES, SPRINGS & MECHANICAL CONTROLS
USE INSIDE & OUTSIDE MICROMETERS, CALIPERS & VERNIERS
REMOVE, REPAIR & INSTAL RADIATORS & HEATER CORES
INSPECT, REMOVE, REPLACE & ADJUST STEERING LINKAGE COMPONENTS
CLEAN, INSPECT REPLACE PARTS ADJUST & INSTAL STEERING BOX
IDENTIFY & CLASSIFY TYPES & MODELS OF ELECTRICAL SYSTEM COMPONENTS
CHECK & ADJUST HEADLIGHT ALIGNMENT
STRAIGHTEN & ALIGN BODIES
FIT WINDSHIELDS
FIT WINDOWS
ADJUST WINDOW CRANK MECHANISMS
FIT DOORS, HOOD & TRUNK LID
ADJUST LOCKING MECHANISMS & HINGES
IDENTIFY, MIX & APPLY PAINT & PRIMER
CONSTRUCT TEMPORARY FRAME & CONTOUR TEMPLATES
MEASURE WINDOWS & OTHER COMPONENTS & ADD TOLERANCE TO DETERMINE OPENING DIMENSIONS
INTERPRET MANUAL SPECIFICATIONS AND LAYOUT FRAME WORK OR SHEET METAL
STRAIGHTEN FRAME EXTREMITIES & BUMPER BRACKETS
STRAIGHTEN & ALIGN WINDOW OPENINGS
STRAIGHTEN & ALIGN ROOF & BODY PANEL FRAMING
REMOVE, STRAIGHTEN & ALIGN HOODS, LIDS & FLAPS
CLAMP & JACK OUT CROSS & CHEASES
INSPECT FOR RUST DAMAGE & CUT OUT CORRODED PARTS
PREPARE SURFACE FOR FILLING
PREPARE BODY FILL SELECT LEAD
APPLY BODY FILL OR LEAD & CURE


ESTIMATE LABOUR COST
CONSULT FLAT RATE MANUALS
COMMUNICATE IN WORK ENVI
APPLY EXHAUST HOSES & FANS PRIOR TO RUNNING ENGINES
SELECT & USE CLEANING FLUIDS, EQUIPMENT & SUPPLIES
PERFORM GENE SHOP DUTIES
SELECT, MAINTAIN & USE BODY FILLER, ROUND & FLAT FILES
USE TORQUING DEVICES
SELECT & USE TAPS, DIES & OTHER THREADING DEVICES
SELECT, ADJUST, CLEAN & OPERATE SPRAY GUN
USE REPAIR & EQUIPMENT
IDENTIFY GASKET MATERIALS, CEMENTS & SOLVENTS & REMOVE GASKETS
ADJUST & REP MECHANICAL & CONTROLS
USE MEASURI TESTING DEV
TEST, ADJUST & REPLACE TORSION BARS
SERVICE & RE STEERING, SUS & BRAKE SYSTE COOLING SYST
CHECK & REPLACE BULBS, FUSES, LAMPS & GATES
REMOVE, INSPECT & INSTAL AUTOMOTIVE INSTRUMENTS
SERVICE & RE ELECTRICAL
INSTALL SEATS & BUMPERS
FIT & INSTAL FENDERS
INSTAL TRIM
INSTAL GRILLES, BUMPERS, LIGHT BRACKETS
REMOVE & RE COMPONENTS OF AUTOMOB
SELECT, USE MATERIALS & PAINT
STRAIGHTEN & ALIGN FENDERS
USE OXY-ACETYLENE CUTTING, HEATING & WELDING EQUIPMENT
STRAIGHTEN FRAMEWORK
SELECT, FILE & READY SURFACE
SAND FILLED SURFACE
SHAPE B CONTOURS

COMMUNICATE EFFECTIVELY IN WORK ENVIRONMENT

PERFORM GENERAL SHOP DUTIES

USE REPAIR TOOLS & EQUIPMENT

ADJUST & REPLACE MECHANICAL EQUIPMENT & CONTROLS

USE MEASURING & TESTING DEVICES

SERVICE & REPAIR STEERING, SUSPENSION & BRAKE SYSTEMS & COOLING SYSTEMS

SERVICE & REPAIR ELECTRICAL SYSTEMS

REMOVE & REPLACE COMPONENTS PARTS OF AUTOMOBILE

SELECT, USE MATERIALS, PRIME & PAINT

STRAIGHTEN & ALIGN FRAMEWORK

SHAPE BODY CONTOURS

Can perform this task with more than acceptable speed and quality, with initiative and adaptibility and can lead others in performing this task.	6
Can perform this task with more than acceptable speed and quality and with initiative and adaptibility to special problem situations.	5
Can perform this task satisfactorily without supervision or assistance with more than acceptable speed and quality of work.	4
Can perform this task satisfactorily without assistance and/or supervision.	3
Can perform this task satisfactorily but requires periodic supervision and/or assistance.	2
Can perform this task, but not without constant supervision and some assistance.	1
Cannot perform this task satisfactorily for participation in a work environment.	0

MOTOR VEHICLE REPAIR (BODY)

LMS

device components such as rotors, sample holders, motor brushes, motor bearings, drive couplings and shaft seals.

□□□ 2416 Performance check clinical centrifuge and other small motor driven device components such as rotors, sample holders, motor brushes, motor bearings, drive couplings and shaft seals.

□□□ 2417 Preventive maintenance of fractional horsepower electr motors from such apparatus as pumps, fraction collec centrifuges, shakers, electrical beds and surgical tables.

□□□ 2418 Remove and replace fractional horsepower electrical motors from such apparatus as pumps, fraction collectors, centrifuges, shakers, electrical beds and surgical tables.

□□□ 2419 Repair fractional horsepower electrical motors from such apparatus as pumps, fraction collectors, centrifuges, shakers, electrical beds and surgical tables.

□□□ 2420 Preventive maintenance of equipment such as incubator ovens, heating elements, bacterial water baths, tissue water baths, and water and blood temperature regulators.

□□□ 2501 Operates basic test equipment, such as high and low voltage power supplies, multimeters, oscilloscopes, tube and transistor testers and bridges.

□□□ 2502 Measures parameters, such as voltage, current resistance, capacitance and inductance.

□□□ 2503 Test diodes, vacuum tubes and transistors.

□□□ 2504 Remove and replace standard electronic components from all types of single function equipment such as defibrillators and electrocardiographs.

□□□ 2505 Assembles simple electrical, mechanical and optical sub-assemblies, such as photodetector circuits, indicators, single stage amplifiers and power supplies.

□□□ 2506 Breadboards simple electrical, mechanical and optical systems.

□□□ 2507 Troubleshoots simple circuits such as series and parallel resistive circuits as found in examining lamps, blowers, heaters, etc.

□□□ 2508 Repairs simple circuits such as series and parallel resistive circuits as found in examining lamps, blowers, heaters, etc.

Name _____

Soc. Sec. No. _____ Date _____

Length of Training _____

Certified by _____
Director

School _____

Address _____

_____

102-009

APPENDIX "B"

TASK CERTIFICATION RECORD

JOB FAMILY: Biomedical Equipment Technician and Related Occupations
EXIT LEVEL: Technician (Entry)

TO THE EMPLOYER:

This occupational readiness record is an inventory of the educational/training program and a measure of the level of proficiency attained in job tasks by the individual student. Each graduate can provide potential employers with more complete task certification lists which itemize in considerable detail, the skills and knowledge in which he has demonstrated proficiency. It is recognized that persons working at the specified technical level will function with direction and assistance from superiors. As a part of his training the graduate has learned to expect appropriate instruction and supervision with each assigned task. Furthermore, the graduate understands that he lacks the authority and training to perform certain functions and operations. He will expect and seek, supervision, assistance and direction where appropriate. Note that the job tasks as identified are basic to the next higher or more sophisticated job level. Work experience, training and further education may qualify the graduate for more complicated tasks, a new job title and higher pay.

KEY TO PROFICIENCY CODE:

vel L: Limited Skill—does simple parts of the task using equired tools and instruments, but requires instruction and supervision to do most parts of the job. Identifies components by name, knows basic facts about the job.

Level M: Moderate Skill—requires assistance on some parts, but can use most tools and special equipment needed. Knows work procedures but may not meet minimum demands for speed and accuracy.

Level S: Skilled—understands operating principles and accomplishes all parts of the task with spot checks of the finished work, meets minimum demands for speed and accuracy.

A graduate receiving this document has satisfactorily demonstrated to the staff his ability to work safely, understand and carry out instructions, and cooperate with other employees. This document also attests to his punctuality, reliability and general work habits.

Technical Education Research Centers TERC

JOB FAMILY: Biomedical Equipment Technician and Related Occupations
EXIT LEVEL: Technician (Entry)

LMS

□□□ 2101 Selects, retrieves and returns to files manufacturers operating and repair service manuals.

□□□ 2102 Transports equipment to in-house repair facility accordi to established procedures.

□□□ 2103 Maintains log and records of each work assignment.

□□□ 2104 Communicates with and provides technical assistance to medical staff using standard medical terminology related to instrumentation and his work.

□□□ 2105 Reads and interprets instructional and maintenance manuals as well as blue prints, mechanical drawings, and schematic diagrams related to the equipment upon which he performs services.

□□□ 2106 Reads technical journals and literature related to the job field.

□□□ 2107 Participates in organized education and training activities to up-grade knowledge and job performance.

□□□ 2108 Returns malfunctioning equipment, in or out of warranty, that is not repairable within the facility to the manufacturer.

□□□ 2109 Cleans and/or lubricates mechanical instruments and devices associated with medical apparatus.

□□□ 2110 Initiates requests for replacement parts and materials.

□□□ 2201 Uses common hand tools as required in the performance of job tasks.

□□□ 2202 Operates fundamental machine tools such as hand drills, drill presses, bench grinder/buffers, breaks, sheers, etc.

□□□ 2203 Remove and replace all external components on single function instruments such as control knobs, fuses, circuit breakers and meters.

□□□ 2204 Repair pan and patient scales.

□□□ 2205 Preventive maintenance as required, elements, tubing, gaskets, and glassware in water stills, auto-analyzers, constant temperature devices and dental units.

□□□ 2206 Remove and replace as required, elements, tubing, gaske and glassware in water stills, auto-analyzers, constant temp erature devices and dental units.

□□□ 2207 Preventive maintenance of steam valves, thermostats, heating elements and gaskets found on portable autoclaves and sterilizers.

□□□ 2208 Remove and replace steam valves, thermostats, heating elements and gaskets found on portable autoclaves and sterilizers.

□□□ 2209 Preventive maintenance of valves, regulators and seals on gas sterilizers.

□□□ 2210 Remove and replace valves, regulators and seals on gas sterilizers.

□□□ 2211 Preventive maintenance of respirator components such as oil-less pumps, valves, filters, pressure switches, gaskets, hoses, clamps and bellows.

□□□ 2212 Remove and replace respirator components such as oil-less pumps, valves, filters, pressure switches, gaskets, hoses, clamps and bellows.

□□□ 2213 Performance check respirator components such as oil-less pumps, valves, filters, pressure switches, gaskets, hoses, clamps and bellows.

LMS

□□□ 2214 Preventive maintenance of instrument refrigeratio components such as start relays, condenser packs, coolant sea and thermostats.

□□□ 2215 Remove and replace instrument refrigeration componen such as start relays, condenser packs, coolant seals and therm stats.

□□□ 2216 Repair instrument refrigeration components such as sta relays, condenser packs, coolant seals and thermostats.

□□□ 2217 Works with fluid and gas fittings and tubing such as tho found in respiration equipment and cooling and heating equi ment, e.g., solders, swages, cuts, bends, etc.

□□□ 2301 Test thermostats such as those found in water baths, warmers, etc.

□□□ 2302 Remove and replace components of pipette drye ultrasonic cleaners, etc.

□□□ 2303 Inspect line cord and line connectors for wear and dama on all medical equipment.

□□□ 2304 Remove and replace line cords and line connectors th are worn or damaged on all medical equipment.

□□□ 2401 Solders standard electrical and electronic components.

□□□ 2402 Repair equipment such as incubator ovens, heating e elements, bacterial water baths, tissue water baths, water a blood temperature regulators.

□□□ 2403 Performance check equipment such as incubator ove heating elements, bacterial water baths, tissue water baths, wat and blood temperature regulators.

□□□ 2404 Repair heating elements and thermal controls of infa incubators.

□□□ 2405 Performance check heating elements and thermal contr of infant incubators.

□□□ 2406 Performance check patient electrode cables such as tho used for ECG, external pacemakers, defibrillators, electr surgical equipment and impedence pneumographs.

□□□ 2407 Remove and replace patient electrode cables such as tho used for ECG, external pacemakers, defibrillators, electr surgical equipment and impedence pneumographs.

□□□ 2408 Remove and replace visible and ultra-violet light sources spectrometers.

□□□ 2409 Align visible and ultra-violet light sources in spectro eters.

□□□ 2410 Preventive maintenance of suction and circulating pum of all types, including pump drive belts, regulators, filters a diaphragms.

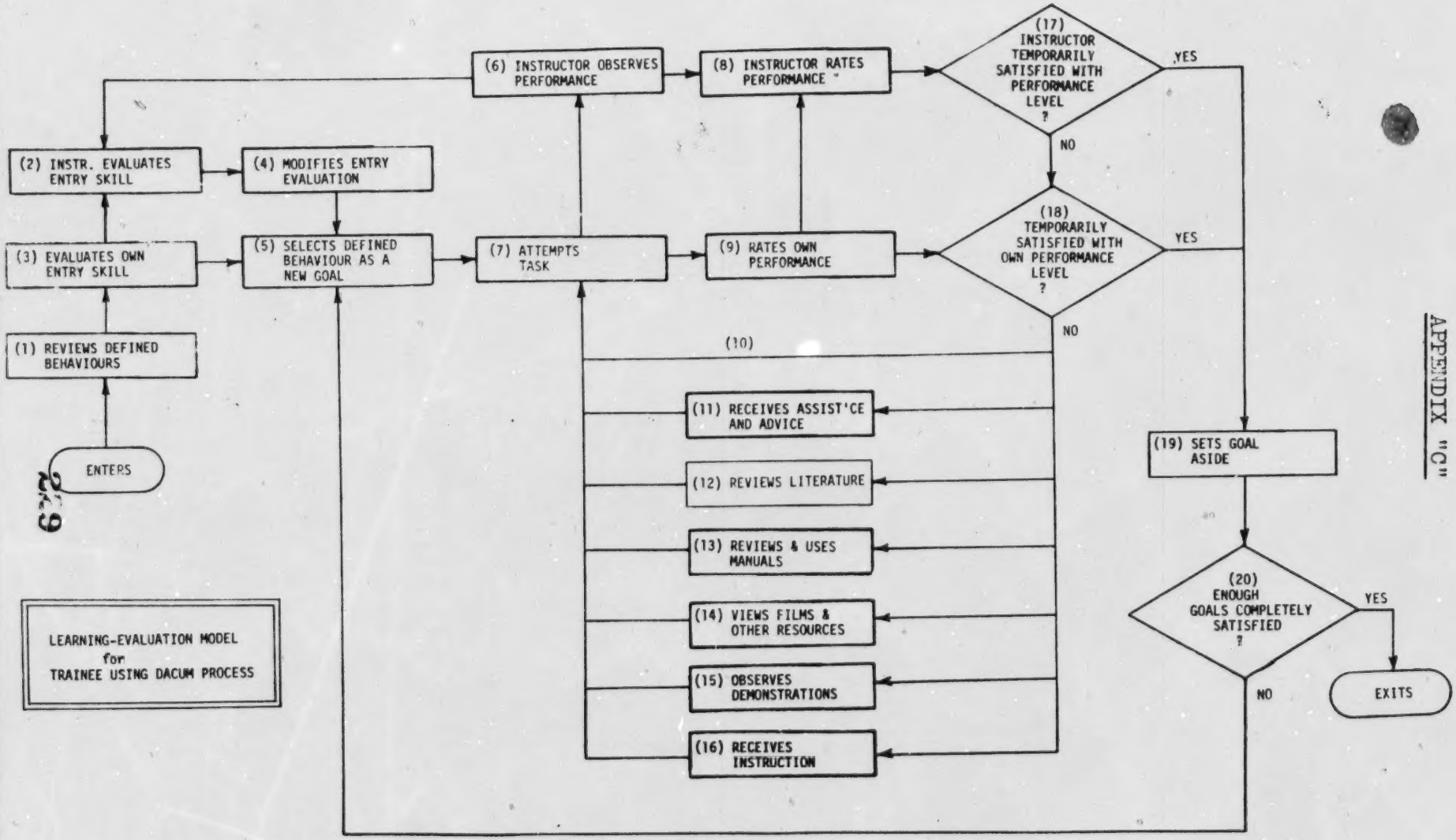
□□□ 2411 Repair suction and circulating pumps of all types inclu ing pump drive belts, regulators, filters and diaphragms.

□□□ 2412 Performance check suction and circulating pumps of types including pump drive belts, regulators, filters, a diaphragms.

□□□ 2413 Preventive maintenance of clinical centrifuge and oth small motor driven device components such as rotors, samp holders, motor brushes, motor bearings, drive couplings a shaft seals.

□□□ 2414 Remove and replace clinical centrifuge and other sm motor driven device components such as rotors, sample holde motor brushes, motor bearings, drive couplings and shaft sea

□□□ 2415 Repair clinical centrifuge and other small motor driv



LEARNING-EVALUATION MODEL
for
TRAINEE USING DACUM PROCESS

APPENDIX "C"

DIAGRAM of FURNITURE ARRANGEMENTS for a DACUM SESSION

ALPHA LIST OF DACUM CHARTS

W. SINNETT
FEB 1975

Name of Program	
1. Academic Upgrading Communications, (3 Charts) Levels I, II & III	Humber College, Ont. MAR 14 1975
2. Academic Upgrading Communications, Levels II & III	Georgian College, Ont.
3. Academic Upgrading Communications, Levels II & III	Sask. NewStart
4. Academic Upgrading English Communications Profile, II & III	Northern College, Ont.
5. Academic Upgrading Math General Program	Ontario Eastern Region
6. Academic Upgrading Math., Level II	Georgian College, Ont.
7. Academic Upgrading Math, Levels I & II and Tech Option	Northern College, Ont.
8. Academic Upgrading Math, Levels II & III	Sask. NewStart
9. Academic Upgrading Math, Levels I, II & III	Humber College, Ont.
10. Academic Upgrading Science, Levels I, II & III	Humber College, Ont.
11. Academic Upgrading Science, Levels II & III	Georgian College, Ont.
12. Accounting Technology	Holland College, P.E.I.
13. Adult Basic Education, Basic Communications -	Nova Scotia

Name of Program	Developed By
14. Adult Basic Education, Basic Math	Nova Scotia
15. Adult Basic Education, Learning Assistance and Monitoring	Nova Scotia
16. Air Conditioner Installer	Job Corps
17. Air Conditioning & Refrigeration Mechanic	Job Corps
18. Airframe Subassembling	Nova Scotia
19.**Ambulance Driver Attendant	Holland College, P.E.I.
20.**Animal Husbandry	Holland College, P.E.I.
21. Antique Restoration	Nova Scotia
22. Appliance Service Repairman	Northern College, Ont.
23.**Appraisal & Assessment of Real Property	Holland College, Ont.
24. Audio Visual Communications Support for Learning Environment	Nova Scotia
25. Automatic Screw Machine Setter/Operator (Multi-Spindle)	Humber College, Ont.
26. Automatic Screw Machine Setter/Operator (Single Spindle)	Humber College, Ont.

	Name of Program	Developed By
27.	Automotive Mechanic	Technical Services Branch, Lusaka, Zambia
28.	Baker	Job Corps
29.	Bartending and Service	A.V.E., Nova Scotia
30.	Basic Communication Skills	Holland College, P.E.I.
31.	Basic Training Programme	Lusaka, Zambia
32.	Binding and Warehouse	Lusaka, Zambia
33.	Brake Shear and Press Set-Up Operator	Humber College, Ont.
34.	Brick and Stone Mason	Job Corps
35.	Broadcasting and Film Arts	Lusaka, Zambia
36.	BTSD Communications	A.V.E., Nova Scotia
37.	BTSD Communications	Dept. of Ed., B.C.
38.	BTSD Mathematics	A.V.E., Nova Scotia
39.	BTSD Mathematics	Dept. of Ed., B.C.
40.	BTSD Science	Dept. of Ed., B.C.
41.	Building Material Sales (4 Charts - Carpentry, Painting, Trades, Maitenance)	Humber College, Ont.

Name of Program	Developed By
42. Building Supervisor & Foreman In-Service Training	Lusaka, Zambia
43. Building Supplies Sales	A.V.E., Nova Scotia
44. Business Management	Holland College, P.E.I.
45. Cable-Television Serviceman	Humber College, Ont.
46. Camera Repair Mechanic	Humber College, Ont.
47. Carpenter, Construction	Job Corps
48. Carpentry - Joinery	Lusaka, Zambia
49. Carpet Installation	A.V.E., Nova Scotia
50. Cement Mason	Job Corps
51.**Cereal & Forage Crops Production	Holland College, P.E.I.
52. Certificate Programme in Accounts and Business Studies	Lusaka, Zambia
53. Child Mental Health Service	Atlantic Child Guidance Centre, Nova Scotia
54. Clerk Typist	Job Corps

	Name of Program	Developed By
55.	Clerk Typist	Lusaka, Zambia
56.	Commercial (Accounting)	Humber College, Ont.
57.	Commercial (Accounting)	Northern College, Ont.
58.	Commercial (Bookkeeping)	Humber College, Ont.
59.	Commercial (Bookkeeping)	Northern College, Ont.
60.	Commercial (Business Machines)	Humber College, Ont.
61.	Commercial (Shorthand, Take 30)	Humber College, Ont.
62.	Commercial (Typing)	Northern College, Ont.
63.	Commercial Design	Holland College, P.E.I.
64.	Commercial and/or Graphic Artist	Job Corps
65.	Commercial Pilot & Instrument Rating	Lusaka, Zambia
66.	Communication Skills Commercial Teacher Training Programme	Lusaka, Zambia
67.	Communication Skills - Craft Programmes	Lusaka, Zambia

Name of Program	Developed By
68. Composition Work	Lusaka, Zambia
69. Construction Technology	Holland College, P.E.I.
70. Cook Training	Dept. of Ed., B.C
71. Cooking	N.S. New Start
72. Custodial Maintenance	Job Corps
73. Deckhand Training	N.S. New Start
74. **Dental Assisting	Holland College, Ont.
75. Designing A Curriculum Dacum	Lusaka, Zambia
76. Dining Waitress-Hostess Service	A.V.E., Nova Scotia
77. District Management	Information Canada, M/P, Ottawa
78. Domestic Appliance & Repair Service	N.S. New Start
79. Draftsman	Job Corps
80. Drywall & Ceiling Erection & Finishing	A.V.E., Nova Scotia
81. Duplication Machine Operator/Office Clerk	Job Corps

Name of Program	Developed By
82. Electrical Appliance Repairman	Job Corps
83. Electrical Construction & Maintenance	Dept. of Ed., Nova Scotia
84. Electrical Craft	Lusaka, Zambia
85. Electrical Craft Programme - Term II	Lusaka, Zambia
86. Electrical Technology	N.S. Dept. of Ed.
87. Electrician	Job Corps
88. Electronics Assembler	Job Corps
89. Electronic Repair	A.V.E., Nova Scotia
90. Electronics (Home Entertainment)	Humber College, Ont.
91. Electronics Technology	Holland College, P.E.I.
92. English as a Second Language	Humber College, Ont.
93. Enquiry/Information Service	Halifax, Nova Scotia
94. Executive & Administrative Assistant	Holland College, P.E.I.

Name of Program	Developed By
95. Farm Business Management	Holland College, P.E.I.
95.1 Farm Business Management Counselling	Holland College, P.E.I.
96. Farm Machinery Maintenance	Holland College, P.E.I.
97. Field Vegetables & Tobacco Production	Holland College, P.E.I.
98. Fitter (Mechanical Maintenance)	Lusaka, Zambia
99. Florist Assistant	Job Corps
100. Food Service & Hotel Administration	Northern College, Ont.
101. Forest Products Scaling	Northern College, Ont.
102. Forestry Filers	Northern College, Ont.
103. Functional Literacy	N.S. New Start
104. Furnace Repairman	Job Corps
105. Furniture Upholsterer	Job Corps
106. Gas Appliance Repair	Job Corps
107. General Nursing Practice	Yarmouth Hospital, N.S.
108. General Sales Clerk	A.V.E., Nova Scotia

	Name of Program	Developed By
109.	General Warehousing & Stockroom Work	A.V.E, Nova Scotia
110.	Health Care Aide	Northern College, Ont.
111.	Heavy Duty Equipment Mechanic	Northern College, Ont.
112.	Heavy Duty Equipment Operation	A.V.E., Nova Scotia
113.	Heavy Duty Equipment Operator	Sheridan College, Ont.
114.	Heavy Equipment Repair	Lusaka, Zambia
115.	Hotel-Motel Housekeeping Service	A.V.E., Nova Scotia
116.	Hotel-Motel Restaurant Management	Holland College, P.E.I.
117.	Housekeeping-Homemaking Training	Nova Scotia
118.	Indigenous Community Work	A.V.E., Nova Scotia
119.	Industrial Instrumentation Technician	Humber College, Ont.
120.	Industrial Maintenance Mechanic (Packaging)	Humber College, Ont.
121.	Industrial Maintenance (Millwright) Mechanics	Northern College, Ont.
122.	Installation Specialist Technician (Carpeting)	Humber College, Ont.
123.	Instructional Materials Centre Technician	Humber College, Ont.

Name of Program	Developed By
124.**Instructional Methods	Holland College, P.E.I.
125. Instructors of Individualized Programs	Humber College, Ont.
126. Instrumentation Mechanic	Humber College, Ont.
127. Jewelry Handcraft	Nova Scotia
128. Key Punch Operator	Job Corps
129. Learner Evaluation & Activity Development	Holland College, P.E.I.
130. Leather Handcraft	Nova Scotia
131.**Legal Secretary	Holland College, P.E.I.
132. Letterpress Machine Printing	Lusaka, Zambia
133. Library Administration - (Commission Library)	Lusaka, Zambia
134. Life Skills	Nova Scotia
135. Light Metal Fabrication	Lusaka, Zambia
136. Lithographic Machine Printing	Lusaka, Zambia
137. Local Government & Band Management for Community Development	Dept. of Ed., B.C.

Name of Program	Developed By
138. Machine Knitting Handcraft	Nova Scotia
139. Machine Shop	Algonquin College, Ont.
140. Machine Operator/Machine Setup Man	Job Corps
141. Machinist (Engineering)	Lusaka, Zambia
142. Manufactured Metal Products Assembler/Fabricator	Humber College, Ont.
143. Marine Engineering (Fishing)	A.V.E., Nova Scotia
144. Marine & Small Power Equipment Mechanic	Humber College, Ont.
145. Metal Fabrication (Heavy)	Lusaka, Zambia
146. Mobile Information Service	Information Canada, M/P, Ottawa
147. Monotype Keyboard - (Composition)	Lusaka, Zambia
148. Motor Vehicle Repair (Body)	N.S. New Start
149. Motor Vehicle Repair (Mechanical)	N.S. New Start
150. Nursing Assistant	Northern College, Ont.
151. Office Machine Operator	Job Corps

Name of Program	Developed By
152. Office Machine Repair	Job Corps
153. Offset Printer	Job Corps
154. Oil Burner Repair & Servicing	Nova Scotia
155. Painter & Paperhanger	Job Corps
156. Pharmacy Assistant	Dept. of Ed., B.C.
157. Photography	Lusaka, Zambia
158. Physiotherapist Science Course	Lusaka, Zambia
159. Plastics Production Technology	Holland College, P.E.I.
160. Plumbing/Sheet Metal	Lusaka, Zambia
161. Police Technology	Holland College, P.E.I.
162. Pottery Handcraft	Nova Scotia
163. **Practical Journalism	Holland College, P.E.I.
164. Practical Nursing	Dept. of Ed., Nova Scotia
165. Precision Instrument Technician	Humber College, Ont.

	Name of Program	Developed By
166.	Primary Forest Harvesting	A.V.E., Nova Scotia
167.	**Principles & Practices of Modern Business	Holland College, P.E.I.
168.	Professional Accountancy Programme - Diploma in Accountancy, Parts I, II & III	Lusaka, Zambia
169.	Professional Counselling (School)	A.E.I., Halifax, Nova Scotia
170.	Property Mapping	Nova Scotia
171.	Psychological Counselling	Univ. of Victoria, B.C.
172.	Radio Announcing	A.V.E., Nova Scotia
173.	Radio & Television Repairman	Job Corps
174.	Radio & Television Repair & Maintenance	Lusaka, Zambia
175.	Resilient Flooring Specialist	Humber College, Ont.
176.	**Resources Planning	Holland College, P.E.I.
177.	Retail Meatcutting	A.V.E., Nova Scotia
178.	Retail Sales Clerk	Job Corps

	Name of Program	Developed By
179.	Retail Sales Specialist - Carpeting	Humber College, Ont.
180.	Sales Specialist - Carpeting	Humber College, Ont.
181.	Sheet Metal Worker	Job Corps
182.	Small Engines Maintenance	Northern College, Ont.
183.	Small Gas Engine Repair	Job Corps
184.	Softwood Lumber Grading	Northern College, Ont.
185.	Stenographic	Dept. of Ed., Nfld.
186.	Stock Clerk	Job Corps
187.	Student Orientation	Niagara College, Ont.
188.	Test Administrator	Canada M/P, Ottawa
189.	Test Interpretation	Canada M/P, Ottawa
190.	Trained Homemaker	Dept. of Ed., B.C.
191.	Trowel Trades	Lusaka, Zambia
192.	Truck Driver (Heavy & Light)	Job Corps

	Name of Program	Developed By
193.	Typewriting	Humber College, Ont.
194.	Upholstering	A.V.E., Nova Scotia
195.	Vehicle Body Repair	Lusaka, Zambia
196.	Waiter/Waitress	Dept. of Ed., B.C.
197.	Warehouseman & Materials Handler	Job Corps
198.	Weaving & Sewing Handcraft	Nova Scotia
199.	Welder	Job Corps
200.	Welder Fitter	Humber College, Ont.
201.	Welding	Lusaka, Zambia
202.	Welding Fabrication	N.S. New Start
203.	Wood Handcraft	Nova Scotia
204.	Youth Work	Nova Scotia